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Case Docket No. 041-2021

Sir:

Transmitted herewith for filing is the patent application of:

INVENTOR: Hideki YASUKAWA et al.

FOR: SYSTEM FOR PROCESSING PROGRAM INFORMATION

Enclosed are:

- ☒ 137 pages of specification, claims, abstract
- ☒ Declaration & Power of Attorney
- ☒ Priority Claimed
- ☐ Certified copy of \_\_\_\_\_
- ☒ 48 sheets of formal drawing
- ☐ An assignment of the invention to \_\_\_\_\_  
and the assignment recordation fee
- ☒ Return Receipt Postcard
- ☐ Information Disclosure Statement, Form PTO-1449
- ☐ Copies of IDS Citations
- ☐

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LOWE HAUPTMAN GOPSTEIN  
GILMAN & BERNER, LLP

*Israel Gopstein*

Israel Gopstein  
Registration No. 27,333

*Michael G. Gilman*  
BY: Michael G. Gilman  
Registration No. 19,114

99 Canal Center Plaza, Suite 420  
Alexandria, Virginia 22314  
(703) 684-1111 IG:tmf

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TITLE OF THE INVENTION

## SYSTEM FOR PROCESSING PROGRAM INFORMATION

BACKGROUND OF THE INVENTION

## Field of The Invention

5           The present invention relates to a system for processing program information capable of efficiently displaying program information to audience.

## Description of the Prior Art

10           In recent years, programs and image information are broadcast and transmitted through a large number of channels because of the spread and progress of satellite broadcasting, satellite communication and so on. In the case of sending information of such a program or the like, that is, program information (program guide) to audience, 15 because of the large number of the channels, of course, the number of frames of a program table also becomes large. There are various proposals for sending or displaying easily to understand and efficiently this program table to the audience. As such a prior art, for instance, there is 20 a program information processor (display device) shown in the Japanese Patent Laid Open No. 83888/1997. This program information processor includes first memory means for storing program information, second memory means for storing designation information for a program retrieval 25 input by an audience, retrieving means for retrieving a

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program in program information on the basis of designation information, program construction control means for constructing a program table based on the retrieval result and displaying it, and program selection means in which  
5 the audience selects a program from the program table. When the audience inputs designation information, a program meeting the condition of the designation information is retrieved from large quantities of program information to make the program table. Designation  
10 information called in this prior art includes, for instance, the present time, established charge information and information of a viewed program. As an instance, when the present time is input as designation information, a program capable of being broadcast at present is retrieved.  
15 As another instance, when information of the viewed program is input as designation information, a program which has not been retrieved is retrieved. Of course, plural items of designation information can be input in one operation. As the program table made as a result of  
20 the retrieval, a table in which various channels are arranged along the vertical axis and time slots are shown along the horizontal axis as described in the above official gazette, is provided. As a matter of course, the relationship between the vertical and horizontal axes may  
25 be reversed. It is also possible that the time slots are

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arranged along the vertical axis and the various channels are shown along the horizontal axis as a program table carried on a general newspaper even at present.

However, in such a prior art program information processor, because a program based on the condition of designation information is retrieved by inputting various pieces of designation information and a program is focussed in accordance with the taste or demand of the audience, there is the advantage that the audience as a user becomes easy to select a program, but the program table made by this program information processor has merely the two-dimensional display construction in which two attributes of channel and time slot are used as two axes of the vertical axis and the horizontal axis as described above. After all, it is a table of merely deleting or culling programs needless to select, from a program table generally used so far. Because of this, under the condition that the number of channels is about to become 100 or more as recent satellite broadcasting, if the program table as above is made, the two dimensionally displayed program table itself occupies an extremely large area and the audience cannot look everywhere when searching a program or has need of a huge time for searching the program. Furthermore, if the whole program table is displayed as the program table itself though a

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program in a specific time zone is to be searched, there is the defect that it is hard to search the aimed program because program columns of other time zones catch his eye.

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#### SUMMARY OF THE INVENTION

The present invention is made in view of such a prior art problem and its object is to provide a system for processing program information in which the display structure of a program table can freely be changed in accordance with a requirement or a taste of an audience.

For attaining the above object, the present invention has the gist that a system for processing program information has a construction comprising program information storage means for storing program information, and program table display means for two-dimensionally displaying a program table following two axes in accordance with two attributes among attributes given to each piece of program information, and the program table two-dimensionally displaying programs by using the attributes at will as two axes, is made.

For the purpose that an audience can determine the two-axes attributes at will, the system further comprises attribute input means through which the two-axes attributes used for two-dimensionally displaying the program table are input, and program table making means

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for retrieving program information in program information stored in the program information storage means on the basis of said input attributes to make the program table, and the program table display means can display the program table from the program table making means. By this manner, the program table making means retrieves program information stored in the program information storage means and can also have the function of classifying the above program information.

By this construction, although a conventional program table has merely the table structure in which time slots are arranged along the vertical axis and various channels are arranged along the horizontal axis, the program table having a free structure without being fixed to that can be displayed and the freeness of grasping and selecting a program for the audience increases.

The invention set forth in claim 1 is that a system for processing program information comprises program information storage means for storing program information, and program table display means for two-dimensionally displaying a program table following two axes in accordance with two attributes among attributes given to each piece of program information, and has the operation that the program table in accordance with a taste or a requirement of a user by arbitrarily

establishing the two-axes attributes, is displayed and a program retrieval can easily and rapidly be carried out.

The invention set forth in claim 2 is that a system for processing program information according to claim 1, further comprises attribute input means through which the two-axes attributes used for two-dimensionally displaying the program table are input, and program table making means for retrieving program information in program information stored in the program information storage means on the basis of said input attributes to make the program table, and has the operation that the user can select and determine the program table having a formation suiting his taste by inputting the two-axes attributes through the attribute input means and the program table display means display the program table from the program table making means.

The invention set forth in claim 3 is that, in a system for processing program information according to claim 2, the program table making means has the functions of retrieving program information stored in the program information storage means and classifying said program information.

The invention set forth in claim 4 is that, in a system for processing program information according to claim 2, another attribute is selected in addition to the

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two-axes attributes of the program table to change over the display.

The invention set forth in claim 5 is that, in a system for processing program information according to claim 2, the display is performed at the condition of culling a portion needless to be displayed when displaying the program table.

The invention set forth in claim 6 is that, in a system for processing program information according to claim 5, the original program table is restored when displaying the program table.

The invention set forth in claim 7 is that, in a system for processing program information according to claim 2, an attribute relative to the program is selected to change over the display.

The invention set forth in claim 8 is that, in a system for processing program information according to claim 2, a new attribute can be added to and an attribute can be deleted from the program table in accordance with a selection of the attribute by a user or an input from another system.

The invention set forth in claim 9 is that, in a system for processing program information according to claim 2, information registered by a user is designated as an attribute of the program table.

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The invention set forth in claim 10 is that, in a system for processing program information according to claim 2, when there are plural programs in a same time zone, they are displayed one upon another as they are shifted rearward little by little, and displayed at the front one by one, and has the operation that they can be used for a program check of the same time zone without expanding the display area.

The invention set forth in claim 11 is that, in a system for processing program information according to claim 2, three-axes attributes of the program table are selected by a user to display information as a three-dimensional shape.

The invention set forth in claim 12 is that, in a system for processing program information according to claim 2, the attributive structure of a word relative to an attribute of the program table can be extracted from program information.

The invention set forth in claim 13 is that, in a system for processing program information according to claim 2, an outline so far, pictures or sounds of a program can be stored to display and play back them.

The invention set forth in claim 14 is that, in a system for processing program information according to claim 2, when a channel or a program is selected as an

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attribute of the program table, it is possible that the channel is changed over to the picture of the program and program relation information is displayed if the program is on the air at present, and only information relative to  
5 the program is displayed if the program is off the air.

The invention set forth in claim 15 is that, in a system for processing program information according to claim 2, a channel is selected as an attribute of the program table, advertisements and program relation  
10 information are displayed in accordance with the time schedule of programs in the channel.

The invention set forth in claim 16 is that, in a system for processing program information according to claim 2, program information, program relation information,  
15 program information renewal information, information registered by a user, a program, a picture, or a sound is transmitted and received.

The invention set forth in claim 17 is that, in a system for processing program information according to  
20 claim 2, an image sequence made by a user is transmitted and received to be displayed in a portion of the program table.

The invention set forth in claim 18 is that, in a system for processing program information according to  
25 claim 2, program information selected by a user is

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transmitted and the number of people viewing the same program is calculated to display the result in a portion of the program table as an audience rating or the number of audience.

5           The invention set forth in claim 19 is a system for processing program information, wherein program information including an index for retrieving a program can be transmitted and received.

10           The invention set forth in claim 20 is that, in a system for processing program information according to claim 19, a user attribute is maintained at the receiver side to retrieve program information including an index for retrieving a program, on the basis of the user attribute.

15           The invention set forth in claim 21 is that, in a system for processing program information according to claim 19, when a retrieval was unsuccessful with program information including an index for retrieving a program, at the receiver side, a retrieval and an automatic  
20   classification are carried out at the transmitter side and the result is transmitted to the receiver side.

          The invention set forth in claim 22 is that, in a system for processing program information according to claim 20, when a retrieval according to the user attribute  
25   was unsuccessful with program information including an

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index for retrieving a program, at the receiver side, a retrieval and an automatic classification according to the user attribute are carried out at the transmitter side and the result is transmitted to the receiver side.

5           The invention set forth in claim 23 is that, in a system for processing program information according to claim 2, a designated program can be recorded, reserved for recording or played back in accordance with a designation of a user or an input from another system.

10           The invention set forth in claim 24 is that, in a system for processing program information according to claim 2, programs recorded or reserved for recording are displayed along the time of the program table.

15           The invention set forth in claim 25 is that, in a system for processing program information according to claim 2, a recorder is provided for recording information of the program viewed by a user, and has the operation that a relationship with recorded program information is examined in all programs and the program is displayed when  
20 it is judged that the relationship is high.

          The invention set forth in claim 26 is that, in a system for processing program information according to claim 2, it is shown whether a performer of the program appears at a certain time of a certain day or not.

25           The invention set forth in claim 27 is that, in a

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system for processing program information according to claim 2, the system includes fitting degree calculation means for calculating a fitting degree between program information and each piece of program classification

5 information, and program classification means in which, to one given piece of program classification information and a program information set, a fitting degree of each piece of program information in the program information set to program classification information, is calculated by using  
10 the fitting degree calculation means to obtain a subset of the program information set having a fitting degree not less than a given threshold value, and has the operation that a line of the program classification predetermined or designated by a user is taken as one or more attributes of  
15 the program table to display it by the program table display means.

The invention set forth in claim 28 is that, in a system for processing program information according to claim 2, the system includes fitting degree calculation  
20 means for calculating a fitting degree between program information and each piece of program classification information, and program classification means in which, as to one given piece of program classification information and a program information set, a fitting degree of each  
25 piece of program information in the program information

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set to program classification information, is calculated by using the fitting degree calculation means to obtain a subset of the program information set having a fitting degree not less than a given threshold value, and has the operation that the program table display means displays only a program classified into a program classification predetermined or designated by a user so that it can be distinguished from another program in the program table without depending on the form of the program table.

10           The invention set forth in claim 29 is that, in a system for processing program information according to claim 2, the system includes program information designation means for designating a subset as to a program information set stored in the program information storage means, relative key word extraction means for extracting a characteristic word set characterizing the subset from the subset of program information designated by the program information designation means, and program information extraction means for extracting characteristic word information from the designated subset by using the relative key word extraction means and extracting program classification information for discriminating and classifying program information similar to program information in the subset, and has the operation that a user can designate a proper program group and easily user-

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define new program classification information, and the trouble of designating a characteristic word can be omitted and a program can be classified more accurately because the characteristic word is extracted from actual  
5 program information.

The invention set forth in claim 30 is that, in a system for processing program information according to any of claims 27 to 29, program classification information is transmitted from a user side terminal to a server side  
10 terminal, program information is classified by the program information classification means at the server side, and only program information classified into program classification information transmitted from the user side terminal is transmitted to the user side terminal, and has  
15 the operation that, by transmitting only program information classified into program classification information transmitted from the user side terminal in a remote place, to the user side terminal to display it on the program display means of the user side terminal, the  
20 data quantity to be transmitted can remarkably be reduced in comparison to the case of transmitting all program table.

#### BRIEF DESCRIPTION OF THE DRAWINGS

25 These and other objects and features will become

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more readily apparent from the following detailed description taken in conjunction with the accompanying drawings in which:

Fig. 1 is a block diagram showing the construction of the first embodiment of a system for processing program information according to the present invention;

Fig. 2 is a data structure diagram extracting and showing an example of program information stored in the program information storage means;

Fig. 3A is a diagram showing the construction of the program table in the ordinary form having two axes of "channel" and "time" used in the above first embodiment;

Fig. 3B is a program table by day of week in relation to only the prime time used in the above first embodiment;

Figs. 4A and 4B are diagrams illustrating a change example of the display operation of the program table in the system for processing program information according to the above first embodiment;

Fig. 5A is a diagram showing the construction of the program table in the ordinary form used in the above first embodiment;

Fig. 5B is diagram showing the program table in a change form having two axes of "type" and "time" used in

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the above first embodiment;

Fig. 5C is a diagram showing the program table in a change form having two axes of "type" and "audience rating" used in the above first embodiment;

5 Fig. 6A is a program table in a change form having two axes of "type" and "performer" used in the above first embodiment;

Fig. 6B is a program table in a change form having two axes of "performer" and "relative information" used in the above first embodiment;

Fig. 7 is a diagram showing by a table proper or improper combinations of attributes as two axes;

Fig. 8 is a block diagram showing the construction of the second embodiment of a system for processing program information according to the present invention;

Fig. 9A is a diagram showing the construction of the program table in the ordinary form having two axes of "channel" and "time" used in the above second embodiment;

20 Fig. 9B is a diagram showing the construction of the program table displaying separately by color the corresponding program obtained by selecting and designating the corresponding attribute in the above second embodiment;

25 Fig. 9C is a diagram showing the construction of

the omitting-over program table obtained by culling the parts needless to display as to the program table shown in Fig. 9B;

Fig. 10 is a block diagram showing the construction of the third embodiment of a system for processing program information according to the present invention;

Fig. 11A is a diagram showing the same program table as the omitting-over program table in the above second embodiment;

Fig. 11B is a diagram showing the program table displaying the corresponding program separately by color after restoring the above omitting-over program table to the original program table;

Fig. 12 is a block diagram showing the construction of the fourth embodiment of a system for processing program information according to the present invention;

Fig. 13A is a diagram showing the construction of the program table in the ordinary form used in the above fourth embodiment;

Fig. 13B is a diagram showing the program table in a change form having two axes of "performer" and "relative information" used in the above fourth embodiment;

Fig. 14 is a block diagram showing the construction of the fifth embodiment of a system for processing program information according to the present invention;

5 Fig. 15A is a diagram showing the construction of the program table in the ordinary form used in the above fifth embodiment;

Fig. 15B is a diagram showing the construction of the program table displaying separately by color the  
10 corresponding program obtained by selecting a sub-type;

Fig. 16 is a block diagram showing the construction of the sixth embodiment of a system for processing program information according to the present invention;

15 Fig. 17A is a diagram showing the construction of the program table in the ordinary form used in the above sixth embodiment;

Fig. 17B is a diagram showing the construction of the program table displaying the user classification items  
20 along the vertical axis and the program titles along the horizontal axis used in the above sixth embodiment;

Fig. 18 is a block diagram showing the construction of the seventh embodiment of a system for processing program information according to the present  
25 invention;

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Fig. 19 is a diagram showing the construction of the same time zone program table displaying the time slots along the vertical axis and the user classification items along the horizontal axis used in the above seventh  
5 embodiment;

Fig. 20 is a block diagram showing the construction of the eighth embodiment of a system for processing program information according to the present invention;

10 Fig. 21A is a A diagram showing the construction of the program table in which the time slots only of the prime time are arranged along the vertical axis and the days of week are arranged along the horizontal axis, used in the above eighth embodiment;

15 Fig. 21B is a diagram showing the construction of the program table three-dimensionally displaying the audience rating corresponding to the program by designating the audience rating in the program table of the above Fig. 21A;

20 Fig. 22 is a block diagram showing the construction of the ninth embodiment of a system for processing program information according to the present invention;

Fig. 23 is a block diagram showing the  
25 construction of the tenth embodiment of a system for

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processing program information according to the present invention;

Fig. 24A is a diagram showing the construction of the program table in the ordinary form used in the above  
5 tenth embodiment;

Fig. 24B is a diagram showing the construction of the picture displaying program information of the corresponding program by performing the program designation in the program table of the above Fig. 24A;

10 Fig. 24C is a diagram showing the construction of the picture displaying the display item of the corresponding program by performing the item designation in the picture of the above Fig. 24B;

Fig. 25 is a block diagram showing the  
15 construction of the eleventh embodiment of a system for processing program information according to the present invention;

Fig. 26A is a diagram showing the construction of the program table in the ordinary form used in the above  
20 eleventh embodiment;

Fig. 26B is a diagram showing the construction of the picture displaying program information of the corresponding program on the air at present by performing the channel designation in the program table of the above  
25 Fig. 25A;

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Fig. 26C is a diagram showing the construction of the other picture displaying an image of the program in parallel with the picture display of the above (b);

Fig. 27 is a block diagram showing the  
5 construction of the twelfth embodiment of a system for processing program information according to the present invention;

Fig. 28A is a diagram showing the construction of the program table in the ordinary form used in the above  
10 twelfth embodiment;

Fig. 28B is a diagram showing the construction of the picture displaying program information of the corresponding program on the air at present by performing the channel designation in the program table of the above  
15 Fig. 28A;

Fig. 28C is a diagram showing the construction of the picture displaying program information of another corresponding program on the air at present by performing the channel designation at another time in the program  
20 table of the above Fig. 28A;

Fig. 29 is a block diagram showing the construction of the thirteenth embodiment of a system for processing program information according to the present invention;

25 Fig. 30A is a diagram showing the construction of

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the program table in the ordinary form used in the above  
thirteenth embodiment;

Fig. 30B is a diagram showing the construction of  
the image picture obtained by designating the program that  
5 had already been on the air, in the program table of the  
above Fig. 30A;

Fig. 31 is a block diagram showing the  
construction of the fourteenth embodiment of a system for  
processing program information according to the present  
10 invention;

Fig. 32A is a diagram showing the construction of  
the program table in the ordinary form used in the above  
fourteenth embodiment;

Fig. 32B is a diagram showing the construction of  
15 the image sequence image picture obtained by selecting the  
user channel in the program table of the above Fig. 32A;

Fig. 33 is a block diagram showing the  
construction of the fifteenth embodiment of a system for  
processing program information according to the present  
20 invention;

Fig. 34 is a block diagram showing the  
construction of the sixteenth embodiment of a system for  
processing program information according to the present  
invention;

25 Fig. 35 is a block diagram showing the

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construction of the seventeenth embodiment of a system for processing program information according to the present invention;

Fig. 36 is a block diagram showing the construction of the eighteenth embodiment of a system for processing program information according to the present invention;

Fig. 37 is a block diagram showing the construction of the nineteenth embodiment of a system for processing program information according to the present invention;

Fig. 38 is a block diagram showing the construction of the twentieth embodiment of a system for processing program information according to the present invention;

Fig. 39A is a diagram showing the construction of the program table in the ordinary form used in the above twentieth embodiment;

Fig. 39B is a diagram showing the construction of the image picture with the recording, play back and reservation buttons obtained by the predetermined program selection in the program table of the above Fig. 39A;

Fig. 40A is a diagram showing the construction of the picture when performing the recording reservation operation in the image picture of Fig. 39B;

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Fig. 40B is a diagram showing the construction of the program table clearly displaying the time zone in which the recording or recording reservation was performed in the picture of the above Fig. 40A;

5 Fig. 41 is a block diagram showing the construction of the twenty-first embodiment of a system for processing program information according to the present invention;

10 Fig. 42A is a diagram showing the construction of the program table in the ordinary form used in the above twenty-first embodiment;

15 Fig. 42B is a diagram showing the construction of the program table in which the program corresponding to the program having ever been viewed is different in color from the other programs, obtained by the button operation in the picture of the above Fig. 42A;

20 Fig. 43 is a diagram showing the user classification program table when designating the user classification operation in the program table shown in Fig. 42A;

Fig. 44 is a block diagram showing the construction of the twenty-second embodiment of a system for processing program information according to the present invention;

25 Fig. 45 is an image diagram showing the process

operation content of the classification method by the adaptation degree calculation means in the above twenty-second embodiment;

Fig. 46 is an image diagram of the classification result of program information by the program information classification means;

Fig. 47 is a block diagram showing the construction of the twenty-third embodiment of a system for processing program information according to the present invention; and

Fig. 48 is a block diagram showing the construction of the twenty-fourth embodiment of a system for processing program information according to the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Hereinafter, embodiments of the present invention will be described in detail with reference to accompanying drawings.

##### First Embodiment

Fig. 1 is a block diagram showing the construction of the first embodiment of a system for processing program information according to the present invention. In Fig. 1, the reference 1 denotes program information storage means for storing received program

information, 2 does attribute input means through which attribute information to be used as two-axes attributes of a program table and the others of attribute information are input, 3 does program information

5 retrieval/classification means as program making means for retrieving or classifying a program in program information on the basis of input attribute information to make the program table, and 4 does program table display means for displaying the made program table.

10 Here, in attribute information to be used as the two-axes attributes, although it goes without saying that time slots (hereinafter, merely called time) and channels conventionally used are included, not limited to those attributes, there are various attributes, for instance,  
15 attributes such as days of week and prime times in relation to time, and category (type) attributes such as news, weather reports, dramas, sports (may be by event), song programs, cooking programs and education programs in relation to the type of program, furthermore, attributes  
20 in relation to sponsors, attributes in relation to performers or producers, information relative to programs (such as home pages, books and CDs), program forms (such as live, rebroadcast, bilingual, teletext, digest, high-definition broadcasting, wide-vision broadcasting and  
25 stereophonic broadcasting), an audience rating,

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broadcasting areas, commentaries, G-codes, and so on.

Fig. 2 is a data structure diagram showing an extracted instance of program information stored in the program information storage means 1. As shown in this drawing, program information is displayed as a directory in the form of a table 150. A detailed content of each piece of program information is separately housed. The names of TV stations providing programs are described in station name columns 151 of this table 150 and the dates and times and the days of the week when those programs are broadcast are described in date columns 152 and day-of-week columns 153, respectively. The broadcasting start times and the broadcasting end times of those programs are described in broadcasting start time columns 154 and broadcasting end time columns 155. The titles of storage means programs are described in program title columns 156. The contents of the storage means programs are described in outline in program content columns 157. Furthermore, in program classification columns 158, the types which the programs belong to are described with corresponding numerical values and the names of the types (0: others, 2: sports, or the like).

As the detailed content of program information, data as follows is housed. This is an example using program information of the pro baseball broadcast from

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nineteen to twenty fifty-four of May 31, 1997, on the  
fourth line in Fig. 2. The detailed content of this piece  
of program information has a data structure such as  
"975310000000186, 01, E8004, Nihon Television,  
5 19970531, 199780531, 1, Saturday,  
19:00, 20:54, pro baseball, Koshien Stadium, Hanshin vs  
Kyojin, commentator: Koji Yamamoto, Kozo Kawato,  
announcer: Bin Ogi, (maximum extension to 9:24, move back  
programs after), Hanshin lack of force of the batting  
10 because of throwing out Greenwel. But the sense of  
stability of the starting pitching staff of Yabu, Kawajiri,  
et al., has increased. If the first run is scored by  
surely seizing a few chances and then the attack of Kyojin  
is stopped by the defensive force including pitcher ...,  
15 (called off) Super Special 97 "song battle of famous songs  
of Showa vs. hit songs of Heisei",  
471832, 01000000000000000000000000000000, 2, sports,"  
As for the other programs, the detailed contents are  
almost the same and have the contents briefly reporting  
20 the contents of the respective programs.

As for the system for processing program  
information constructed as above, the operation will be  
described hereinafter. Figs. 3A and 3B are diagrams for  
illustrating display operations of the program table in  
25 the system for processing program information according to

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the above first embodiment. In this first embodiment, when displaying the program table 101, as shown in Fig. 3A, at first, as a base display operation, the program table 101 in which time slots are arranged along the vertical axis 102 and various channels are arranged along the horizontal axis 103 is two-dimensionally displayed on the program table display means 4. On the positions adjacent to the axes of the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105, and display columns for other two-axes attributes for changing the construction of the program table, that is, change attribute display columns 106 and 107. In the instance of Fig. 3A, "time" is displayed in the present attribute display column 104 and "CH" representing channel is displayed in the present attribute display column 105. "prime time" as another piece of attribute information capable of constituting the two-axes attributes is displayed in the change attribute display column 106, and "day of week" as another piece of attribute information likewise capable of constituting the two-axes attributes is displayed in the change attribute display column 107. The above-described attribute display columns 104, 105,

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106 and 107, or various display columns described later each has the function as a operation button that, when the display column is clicked by data input means (a mouse or the like), the operation displayed therein is performed or  
5 the picture is changed to show the matter displayed therein.

If an audience designates the respective attributes "prime time" and " day of week" from the change attribute display columns 106 and 107, those attributes  
10 are considered input through the attribute input means and the program information retrieval/classification means 3 makes a program table using the respective attributes as the two-axes attributes and the program table by day of week relative to only the prime time (eight o'clock to ten  
15 o'clock), that is, the program table 108 in which the time slots only of the prime time (eight o'clock to ten o'clock) are arranged along the vertical axis 102 and the days of week (Monday, Tuesday, Wednesday, ...) are arranged along the horizontal axis 103, is displayed on  
20 the program table display means 4. In Figs. 3A and 3B, squares other than the axes 102 and 103 are program information display columns 109, in which respective corresponding pieces of program information are displayed or stored as data in a memory of the program table display  
25 means at the conditions of being able to display.

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Here, the operation of the program information retrieval/classification means 3 used in the present invention will be described. The program information retrieval/classification means 3 has either or both of the functions of retrieval and classification in addition to the function of making a program table. Here, the retrieval function will be described first (the classification function will be described in the sixth embodiment).

As the attributes input through the attribute input means 2, there are various pieces of attribute information, for instance, the time (the date, the day of week, the prime time, the start time, and the end time), the channel, the type (such as news, weather reports, dramas, and sports), the subtype, the title, the sponsor, the performer (the role, and the number of appearance), the producer, program relation information (such as home pages, books and CDs), program forms (such as live, rebroadcast, bilingual, teletext, digest, high-definition broadcasting, wide-vision broadcasting and stereophonic broadcasting), an audience rating, broadcasting areas, commentaries, G-codes, and so on. Not merely the attributes but also attribute values can be considered.

In Figs. 3A and eB, the buttons such as "CH", "time", "day of week" and "prime time", and each square of

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the program table, that is, the program display column 109 correspond to the attribute input means 2 in Fig. 1. For instance, if the buttons of " day of week" and "prime time" are operated, from the attribute of "day of week",  
5 the part of "Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday" is obtained from the data of "day of week: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday".  
Furthermore, from the attribute of "prime time", the part  
10 of "20, 21, 22" is obtained from the data of "prime time: 20, 21, 22" stored in attribute structure storage means. The attribute structure storage means is memory means for storing data relative to the attribute, the construction  
15 and operation of which will be described in the description of a later embodiment. Program information satisfying those two attribute values is retrieved from the program information storage means 1 of Fig. 1 through the program information retrieval/classification means 3,  
20 and the corresponding position of the program table is determined to display it on the program table display means 4. In Fig. 1, the attribute structure storage means is in default.

As described above, in this embodiment, as a  
25 manner of view other than the ordinary program table

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comprising the two axes of existing channel and time, the user can look the program table in the form that he likes to look, by designating by himself the two attributes (two-axes attributes) that he likes to look. Furthermore, he can designate the attribute by the data constituted by an attribute stored in the attribute structure storage means and the attribute value. From that, in conventional retrieving systems, there are many cases that the retrieval result is shown as a list by a certain attribute, for instance, an attribute such as ranking. In the case of the display in relation to two attributes by this manner, as the display, two lists or the display in relation to the attributes on or after the second in each item in the list is required. In contrast to this, by including the retrieval result in this table form, because at least the two attributes of the vertical and horizontal axes can be used, in the case of the two attributes, the display is possible by one table. As for attributes on and after the third, the displays in relation to those attributes can be inserted in the program display columns 109 in the table similarly to the list. As described above, the merit as the table can be utilized for the retrieval result, furthermore, the display can be proposed to the user without changing the display image.

Figs. 4A and 4B are diagrams for illustrating

modified examples of display operations of the program table in the system for processing program information according to the above first embodiment. In this modified operation of the first embodiments, at the position adjacent to the right side of the program table 108 in the display picture displaying the program table 108, there are provided attribute display columns 110 and 111 for further changing the construction of the program table. In the example of Fig. 4A, "NEWS (news)", which is one of the types of programs, is displayed in the attribute display column 110, and "audience rating" representing an item attribute wanted to investigate is displayed in the other attribute display column 111.

If the audience designates the respective attributes of "NEWS" and "audience rating" from the attribute display columns 110 and 111, those attributes are considered input through the attribute input means, and the program information retrieval/classification means 3 makes a program investigation result table 112 along the respective attributes to display the audience rating investigation result table 112 of the news program by the date of week in relation to only the prime time (eight o'clock to ten o'clock), on the program table display means 4. By this manner, changing over the display becomes possible by selecting other attributes in addition



to the two-axes attributes of the program table 101 or 108.  
In this case of Figs. 4, if buttons such as "audience  
rating" and "NEWS", which are attributes other than the  
buttons of the two-axes attributes of the program table  
5 101 such as "CH", "time", "day of week" and "prime time",  
are operated, program information corresponding to those  
is retrieved from the program information storage means 1  
shown in Fig. 1 through the program information  
retrieval/classification means 3 to display it on the  
10 program table display means 4.

By this manner, in relation to relative  
attributes other than the attributes on the two axes of  
the program table 101, they can be looked with relation to  
the program table 108 or 112, and more various measures  
15 for viewing the program table can be proposed to the user.

Furthermore, as another operation form, for  
instance, in the condition that the ordinary program table  
101 is displayed on the program table display means 4, if  
the user inputs "type" and "time" through the attribute  
20 input means 2, (because the time is not selected, it is  
input by default), from program information of Fig. 2, the  
fields of the type and the time of each piece of program  
information are checked to select one in which the same  
contents are described in both of them, and the program is  
25 arranged in the columns of the corresponding type and the

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corresponding time of the program table. As for the two-axes attributes, from program information of Fig. 2, different attributes relative to the input attributes are used. Also in the case of selecting other attributes, it is similar. In the case of selecting only one attribute of the two-axes attributes, the old attribute is used for the attribute not selected. By the above operation, on the program table display means 4, from the ordinary program table 101 shown in Fig. 5A, a program table 159 in which "type" and "time" are used for the two axes as shown in Fig. 5B, is displayed. As for the change operation of the display of the program table by a selection operation of the two-axes attributes, a little more description will be made. In the display condition of Fig. 5B, if the user inputs "type" and "audience rating" through the attribute input means 2, a program table in which each attribute is used for the two axis is displayed as shown in Fig. 5C. Next, in the display condition of Fig. 5C, if the user inputs "type" and "performer" through the attribute input means 2, performers are enumerated on the vertical axis 102 as shown in Fig. 6A and the type is shown on the horizontal axis 103 to display a program table in which each attribute is used for the two axes. Furthermore, in the display condition of Fig. 6C, if the user inputs "performer" and "relative information" through the

attribute input means 2, the performers are enumerated on the vertical axis 102 as shown in Fig. 6B and information such as CDs, books and home pages is shown on the horizontal axis 103 as relative information to display a program table in which each attribute is used for the two axes. As this manner, by optionally inputting the two-axes attributes, the form or the construction of the program table can be changed one after another.

As described above, in this embodiment, as a manner of view other than the ordinary program table comprising the two axes of existing channel and time, the user can look the program table as changing the form of the program table one after another, by designating by himself the two attributes (two-axes attributes) that he likes to look. For instance, in the above operation, if "type" and "time" are selected as the two-axes attributes, it becomes easy to find the weather report at the time nearest from now. If "type" and "audience rating" are selected, it is possible to select and view only highly popular ones among dramas. If "type" and "performer" are selected, it can be known that which performer often appears in which type. Furthermore, if "performer" and "relative information" are selected, it can be known that which performer does what activity.

Upon the input operation of the two-axes

attributes for changing the form of the program table, any attributes cannot freely be input but there are combinations of attributes improper for the two-axes attributes. Fig. 7 is a diagram for showing combinations of attributes proper or improper for the two-axes attributes by a table. In this drawing, the combinations of attributes marked by ○ are considered proper for the two-axes attributes and the combinations of attributes marked by × are considered improper for the two-axes attributes. The combinations of attributes marked by △ cannot be judged whether they are proper or improper for the two-axes attributes. For instance, if "time" and "channel" are selected as two attributes, an ordinary program table can be made. It is a combination of attributes proper for two axes. As effective combinations other than this, there are the other combinations marked by ○ and effective manners of viewing the program table can be proposed by increasing variations for showing program information to the user.

In the conventional program information retrieval system, there are many cases that the retrieval result is shown as a list by a certain attribute, for instance, an attribute such as ranking. In the case of the display in relation to two attributes by this manner, as the display, two lists or the display in relation to the attributes on

or after the second in each item in the list is required. Because that second attribute display is displayed in the form of depending on the first attribute, it cannot be considered an even display as to the attributes. That is, in contrast to laying emphasis on the first attribute, by including the retrieval result in this table form, because at least the two attributes of the vertical and horizontal axes can be used, because of an even display, in the case of the two attributes, the display is possible by one table and the manner of view from the user does not incline to one attribute. Furthermore, as for attributes on and after the third, the displays in relation to those attributes can be inserted in squares (correspond to the reference 109) in the table similarly to the list. As described above, the merit as the table can be utilized for the retrieval result, furthermore, the display can be proposed to the user without changing the display image.

#### 2nd Embodiment

Fig. 8 is a block diagram showing the construction of the second embodiment of a system for processing program information according to the present invention. In Fig. 8, the reference 5 denotes program table omission means for culling information needless to display in a program table. The program table omission means 5 is connected between program information

retrieval/classification means 3 and program table display means to receive data from the program information retrieval/classification means 3 and send the processing result to the program table display means 4. In this second embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, the program information retrieval/classification means 3, and the program table display means 4.

The operation of the system for processing program information according to the second embodiment having this construction will be described. Figs. 9 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the second embodiment. In this second embodiment, as shown in Fig. 9A, at first, a basic program table 101 is two-dimensionally displayed on the program table display means 4. At the position (the upper position of the program table) adjacent to the program table 101 in the display picture, there is provided a retrieval attribute display column 113 for retrieving a program. In this retrieval attribute display column 113, "baseball" in relation to the type is displayed as the attribute wanted to retrieve a program.

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If the user selects and designate the corresponding attribute "baseball" from the retrieval attribute display column 113, this attribute is considered input through the attribute input means 2 and the program information retrieval/classification means 3 retrieves the program corresponding to the attribute as shown in Fig. 9B to make a program table 114 in which, for instance, the corresponding programs are displayed separately by color (in this case, from the baseball through the program information retrieval/classification means 3, a program relative to the baseball is retrieved from the program information storage means 1 and the program is colored. This program table 114 is sent to the program table omission means 5. The program table omission means 5 culls the part needless to display in the program table 114, that is, programs other than the retrieved program relative to "baseball" and makes an omitting-over program table 115 as shown in Fig. 9C to send it to the program table display means 4. In this case, the program table omission means 5 culls the other non-relative part from the program table to remain only the part of the time and channel including the colored program (in general, the program table is colored and all of them are displayed but the two axes not colored are found by the program table omission means not to display the part). By this manner,

the above omitting-over program table 115 is displayed on the program table display means 4. By this manner, the audience can look the program table in which only the program he likes to know is displayed in a condensed manner from the enormous amount of program information. Particularly in the case of the program table display means 4 having a small display area for the program table, only a part can be displayed by scrolling or the like. By the method of this embodiment, the non-relative parts are omitted as much as possible and viewing in a small display area becomes possible.

### 3rd Embodiment

Fig. 10 is a block diagram showing the construction of the third embodiment of a system for processing program information according to the present invention. In Fig. 10, the reference 6 denotes attribute storage means for storing attribute information input through attribute input means 2, and 7 does restoration input means for inputting a restoration instruction for culled program information. In this third embodiment, the other construction of the system for processing program information is the same as the above second embodiment and includes program information storage means 1, the attribute input means 2, program information retrieval/classification means 3, program table display



means 4, and program table omission means 5. The attribute storage means 6 is connected to receive data from the attribute input means 2 and send stored data to the restoration input means 7. The restoration input means 7 is connected to receive data from the attribute storage means 6 and send the restoration input data to the program information retrieval/classification means 3 and the program table omission means 5.

The operation of the system for processing program information according to the third embodiment having this construction will be described. Figs. 11 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the third embodiment. In this third embodiment, the program table shown in Fig. 11A is the same as the omitting-over program table 115 in the above second embodiment. At the position (the upper position of the program table) adjacent to the omitting-over program table 115 in this display picture, there is provided a restoration instruction column 116 abreast with a retrieval attribute display column 113 for retrieving a program.

After displaying the above omitting-over program table 115, if the audience instructs a restoration from the restoration instruction column 116, this command data

are considered instructed and input through the restoration input means 7 and the restoration input means 7 reads out a restoration attribute from the attribute storage means 6 to send it to the program information retrieval/classification means 3 and gives an operation instruction to this program information retrieval/classification means 3. By this manner, as shown in Fig. 11B, the program information retrieval/classification means 3 retrieves a program corresponding to the previously instructed retrieval attribute to make a program table 114 in which the corresponding program is displayed separately by color. The program table omission means 5 is stopped operating for processing by an instruction signal from the restoration input means 7. Although this program table 114 is sent to the program table omission means 5, because the program table omission means 5 is at the condition of stopping the operation, the program table 114 is sent as it is to the program table display means 4 to display it. By this manner, the audience can look the program table 114 restored as shown in Fig. 11B. It is effective if he likes to look the omitted part in the program table having been once omitted.

For instance, as a concrete operation successive from the second embodiment to the third embodiment, if

"baseball" is selected in the program table 101 in Fig. 9A, the programs relative to the baseball are colored in the program table 114 (Fig. 9B). This processing operation is performed by retrieving the programs relative to the  
5 baseball from the program information storage means 1 from the baseball through the program information retrieval/classification means 3 to color the programs. Only the parts of the times and channels including the colored programs are left and next, the other parts having  
10 no relation are culled from the program table to obtain the program table 115 as shown in Fig. 9C. This processing finds two axes not being colored by the program table omission means 5 from the program table (yet the ordinary program table at this time) displayed by merely  
15 partially being colored not to display the part. After this, if the button 116 of "to original" is operated in Fig. 11A, the restored program table 114 as shown in Fig. 11B is displayed.

#### 4th Embodiment

20 Fig. 12 is a block diagram showing the construction of the fourth embodiment of a system for processing program information according to the present invention. In Fig. 12, the reference 8 denotes program relation information storage means for storing information  
25 relative to the program, and 9 does program relation

information retrieval/classification means for retrieving  
and classifying program relation information. In this  
fourth embodiment, the other construction of the system  
for processing program information is the same as the  
5 above first embodiment and includes program information  
storage means 1, attribute input means 2, program  
information retrieval/classification means 3, and program  
table display means 4. The program relation information  
storage means 8 stores information relative to respective  
10 program information sentences, for instance, performers,  
the producer, the sponsor, the explanation home page  
address of the program, CDs, books, and so on. This  
program relation information storage means 8 is connected  
to the program relation information  
15 retrieval/classification means 9 to send data stored  
therein to the program relation information  
retrieval/classification means 9. The program relation  
information retrieval/classification means is connected to  
retrieve and classify the above program relation  
20 information and send the retrieval/classification result  
to the program information retrieval/classification means  
3.

The operation of the system for processing  
program information according to the fourth embodiment  
25 having this construction will be described. Figs. 13 are

diagrams for illustrating the display operation of the program table in the system for processing program information according to the fourth embodiment. In this fourth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 13A. At the positions adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105 and a display column for other two-axes attributes for changing the construction of the program table, that is, a change attribute display column 107. Another attribute display column 111 for changing the construction of the program table is provided. In the example of Fig. 13A, "time" is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105. In the change attribute display column 107, "day of week" as another piece of attribute information capable of being the two-axes attributes is displayed. In the other attribute display column 111, an operation button display of "audience rating" showing the item attribute wanted to investigate is performed. Furthermore, at the position adjacent to the program table 101 in this

display picture, there are provided a relative information display column 117 and a performer display column 118 for displaying or designating a performer corresponding to one item of the relative information.

5           If the audience inputs the attributes of "performer" and "relative information" through the attribute input means 2 to select "performer" for the attribute of the vertical axis of the program table 101 and "relative information" for the attribute of the  
10 horizontal axis, the program information retrieval/classification means 3 makes a demand for data to the program relation information retrieval/classification means 9. With this, the program relation information retrieval/classification means 9  
15 makes a demand for data to the program relation information storage means 8 to receive a delivery of data. The program relation information retrieval/classification means 9 retrieves and classifies relative information in program relation information to send it to the program  
20 information retrieval/classification means 3. By this manner, a relation program table 119 in which sets of performers (Yukiko Sakurai, Takuya Kimura, Arisa Mizuki, ... are listed up on the vertical axis 102) and relative information (CD, book and home page are listed up  
25 on the horizontal axis 103) are two-dimensionally

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displayed in the form of a table as shown in Fig. 13B, is made. This relation program table 119 is sent to the program table display means 4 to be displayed. By this manner, the audience can look information relative to the program as shown in Fig. 13B and the user can obtain not merely information directly relative to the program but information indirectly relative to it. There are the case that the program relation information retrieval/classification means 9 and the program relation information storage means 8 are locally disposed and the case that they are remotely disposed.

By this manner, not merely information directly relative to the program but information indirectly relative to it can be proposed to the user. For instance, in the case of the program relation information storage means 8 of a recording medium such as CD-ROM and DVD (digital video disk), in accordance with the program selection in the program table, it is possible that an image or a sound from the recording medium is played or information such as a text used in the program, a dictionary and an encyclopedia is displayed. If the program relation information storage means 8 is a home page or the like on a network, a page relative to the program can be retrieved by the program relation information retrieval/classification means 9 to be

50

displayed. Although the selection of the attribute has been described here, the case of adding a certain attribute to another attribute can be considered. For instance, it is such as a combination of the attribute of audience rating and the attribute of type (drama) as shown in the following two tables.

[Table 1]

		Attribute 1		
		Attribute value 11,	Attribute value 12,	Attribute value 13
Attributes 2 and 3	Attribute value 21 and Attribute 31			
	Attribute value 22 and Attribute 31			
	Attribute value 23 and Attribute 31			

10

[Table 2]

		Channel		
		NHK,	NHK Education,	Nihon Television
Audience rating and Dramas	Dramas not less than 30%			
	Dramas not less than 20%			
	Dramas not less than 10%			

5th Embodiment



Fig. 14 is a block diagram showing the construction of the fifth embodiment of a system for processing program information according to the present invention. In Fig. 14, the reference 10 denotes attribute input means display means for displaying information input to attribute input means, and 11 does attribute structure storage means for storing data relative to the structure of the attribute input through the attribute input means. In this fourth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, the attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The attribute input means display means 10 is connected to the attribute input means 2 to display the input means data and connected to send data to the attribute structure storage means 11. The attribute structure storage means 11 is connected to send data to and receive data from the attribute input means display means 10.

The operation of the system for processing program information according to the fifth embodiment having this construction will be described. Figs. 15 are diagrams for illustrating the display operation of the program table in the system for processing program

information according to the fifth embodiment. In this fifth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 15A. At the position (the upper position of the program table) adjacent to the program table 101 in the display picture, there is provided a retrieval attribute display column 113 for retrieving a program. In this retrieval attribute display column 113, "baseball" relative to the type is displayed as the attribute wanted to retrieve a program.

If the audience selects and designates the corresponding attribute "baseball" from the retrieval attribute display column 113, "baseball" is considered input through the attribute input means 2, and the attribute input means display means 10 picks out the part of "high-school baseball, pro baseball, major leagues" corresponding to "baseball" from the data of "baseball: high-school baseball, pro baseball, major leagues" stored in the attribute structure storage means 11 to display buttons (113a, 113b and 113c, respectively) of those attributes. By this manner, the attributes relative to the subtypes of so-called "baseball" are given as candidates and the attributes relative to the subtypes are displayed. If the audience further selects any (for instance, the high-school baseball 113a) of the subtypes,

the program information retrieval/classification means 3  
retrieves a program corresponding to the attribute as  
shown in Fig. 15B and, for instance, makes a program table  
101a in which the corresponding program is displayed  
5 separately by color (in this case, from the high-school  
baseball through the program information  
retrieval/classification means 3, a program relative to  
the high-school baseball is retrieved from the program  
information storage means 1 to color the program). This  
10 program table 101a is sent to the program table display  
means 4 to be displayed thereon. By this manner, it  
becomes possible to perform the program retrieval in the  
more specialized type to make and display the program  
table. It becomes possible to input not only in relation  
15 to the statically fixed attribute but also in relation to  
another relative attribute.

By this manner, although the subtype to the type  
is proposed to the user as the attribute and it becomes  
possible to focus the program, by displaying the attribute  
20 relative to the program, for instance, performers,  
rebroadcast, teletext, manager comment, time, channel,  
title, and key words such as O-157, AIDS and earthquake as  
the attribute value relative to the program, as the  
attribute input 2 to be proposed to the user, a new manner  
25 of viewing the program table to the user can be proposed

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by combining those attributes.

#### 6th Embodiment

Fig. 16 is a block diagram showing the construction of the sixth embodiment of a system for processing program information according to the present invention. In Fig. 16, the reference 11 denotes attribute structure storage means for storing data relative to the structure of the attribute input through attribute input means, and 12 dose attribute structure establishment means for establishing the attribute structure. In this sixth embodiment, the other structure of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, the attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The attribute structure storage means 11 is connected to send data to and receive data from the attribute input means 2. The attribute structure storage means 11 is connected to the attribute input means 2 to store the instruction data of the attribute input through the attribute input means 2. The attribute structure storage means 11 is also connected to the attribute structure establishment means 12 to receive data from the attribute structure establishment means 12 and store them.

The operation of the system for processing

program information according to the sixth embodiment having this construction will be described. Fig. 17 is a diagram for illustrating the display operation of the program table in the system for processing program

5 information according to the sixth embodiment. Here, the classification function of the program information retrieval/classification means 3 will be described.

Through the attribute structure input means 12 in Fig. 16, the attribute structure is input by the user. As the

10 attribute structure, for instance, there are "computer: software, CG, personal computer, ..." and so on. This means that, in the user definition type of "computer", each key word of "software, CG, personal computer, ..." appears. Then, the program information

15 retrieval/classification means 3 takes matching with program information stored in the program information storage means 1 by this attribute structure, for instance, the letter line of data as shown in Fig. 2 and classifies each program to add classification information to each

20 program, for instance, add classification information as "computer" in the case of good matching with the key word of "software, CG, personal computer, ..." or the like.

The above key word for the user classification of "software, CG, personal computer, ...", that is, the

25 attribute structure is input through the attribute

structure establishment means 12 by designating "computer" when the audience likes to look (or look for from the program table) the program relative to the computer. This attribute structure is stored in the attribute structure storage means 11. The attribute structure not registered by the audience himself can also be input through the attribute structure establishment means 12. In the example of the above computer, as other attribute structures to be input, for instance, there are terms such as application and protocol.

Under such a condition of program information being classified, upon the display operation of the program table in this sixth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 17A. At the position adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105, and a display column for other two-axes attributes for changing the construction of the program table, that is, a change attribute display column 107. There is also provided another attribute display column 111 for changing the construction of the program table. In the example of Fig.

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17A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105. In the change attribute display column 107,  
5 "day of week" as another piece of attribute information capable of being the two-axes attributes is displayed. In the other attribute display column 111, an operation button 100 of "user classification" representing the attribute that the audience classifies and establishes  
10 based on his taste, interest or requirement, is displayed.

If the audience selects and designates the corresponding attribute "user classification" from the attribute display column 111, "user classification" is considered input through the attribute input means 2 and,  
15 for instance, the part of "software, CG, personal computer, ..." is obtained from "computer: software, CG, personal computer, ..." stored in the attribute structure storage means 11, and the input to the program information retrieval/classification means 3 is performed by using  
20 those as the key word. The program information retrieval/classification means 3 performs the retrieval on the basis of the user attribute previously established to the program information storage means 1, and classifies information received from the program information storage  
25 means 1 to make the user classification program table 120

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as shown in Fig. 17B. In this user classification program table 120, various kinds of user classification items such as "computer", "diving", "my taste", ..., are displayed along the vertical axis 102, and various kinds of program titles are displayed along the horizontal axis 103 in the predetermined order such as "1", "2", "3", .... The user classification program table 120 is sent to the program table display means 4 to be displayed. By this manner, the audience can obtain the program table meeting the classification based on his taste or the like, and easily perform the program selection.

As another operation, it is possible that the program information retrieval/classification means 3 previously classifies program information stored in the program information storage means 1 from "computer: software, CG, personal computer" stored in the attribute structure storage means 11 so that the classification item is "computer" if the key word of "software, CG, personal computer" is included, and, if "user classification" is selected through the attribute input means 2, the part of "computer" of "computer: software, CG, personal computer" is taken out of the attribute structure storage means 11, the retrieval is performed from the program information storage means 1 through the program information retrieval/classification means 3 by using this key word,

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and the user classification program table 120 is made by  
classifying the corresponding programs to display it on  
the program table display means 4. By this manner,  
because the program table is displayed in accordance with  
5 the user classification method previously registered, the  
program table fitting the audience can be made by making  
the user definition attribute.

As described above, in this embodiment, because  
the user definition attribute structure can be established,  
10 the manner of viewing program information by this  
attribute defined by the user can be expanded. Although  
the type of the program is defined in this example, it is  
also possible that, for instance, program titles to be  
classified are directly defined such as "child: Ponkikkies,  
15 Tales of old Japan", or they are defined in levels such as

"child: animation, educational program", ... (the  
first level)

"animation: Doraemon, Sazae san", "educational  
program: saga drama, English conversation", ... (the  
20 second level)

and they are actually used as

"child: Draemon, Sazae san, saga drama, English  
conversation".

By this manner, in addition to the conventional manner of  
25 viewing the program table, the manner from the point of

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view that the user likes to look is possible.

#### 7th Embodiment

Fig. 18 is a block diagram showing the construction of the seventh embodiment of a system for processing program information according to the present invention. In Fig. 18, the reference 13 denotes same time zone detection means for detecting programs in the same time zone from program information. In this seventh embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The same time zone detection means 13 is connected to detect the programs in the same time zone based on program information sent from the program information retrieval/classification means 3 and send them to the program table display means 4.

The operation of the system for processing program information according to the seventh embodiment having this construction will be described. Fig. 19 is a diagram for illustrating the display operation of the program table in the system for processing program information according to the seventh embodiment. In this seventh embodiment, the table shown in Fig. 19 is a same

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time zone program table 121. In this same time zone  
program table 121, time slots are arranged along the  
vertical axis 102 and various user classification items  
such as "computer", "diving", "my taste", ..., are  
5 displayed along the horizontal axis 103. In the example  
of Fig. 19, the prime time is selected as the time slot.  
When there are plural programs in a predetermined time  
zone as to a certain user classification item as a result  
of the retrieval and classification, those plural programs  
10 are displayed at the condition that they are overlapped on  
the corresponding program information display columns 109.  
In Fig. 19, the "computer" item in 19 o'clock zone, the  
"my taste" item in 22 o'clock zone and so on correspond to  
the overlap displays of the above pieces of program  
15 information.

In this display condition, if a program displayed  
with overlapping is selected (here, for instance, "Ii  
Hito" is selected), "Ii Hito" is considered input through  
the attribute input means 2 and the attribute becomes the  
20 attributes of the two axes of the table, "my taste" and  
"22 o'clock" and the corresponding programs are retrieved  
from the program information storage means 1 by this  
attribute to display them in order. In this retrieval and  
display operation of program information, in the initial  
25 overlap program display, the same time zone detection

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means 13 detects the programs broadcast in the same time zone from the program information storage means 1 through the program information retrieval/classification means 3 to display the images overlapped by the detected number, on the program table display means 4. By clicking the program information display item 109 in which the plural pieces of program information are overlapped and displayed, by the data input means, the overlapped programs can be looked in order as the pages are turned. By this manner, information of the programs in the same time zone can be looked without expanding the display area.

#### 8th Embodiment

Fig. 20 is a block diagram showing the construction of the eighth embodiment of a system for processing program information according to the present invention. In Fig. 20, the reference 14 denotes three-dimensional program table display means for three-dimensionally displaying the program table. This three-dimensional program table display means 14 is used instead of the program table display means 4 and can display a predetermined piece of information in a three-dimensional construction. In this eighth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute

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input means 2, and program information  
retrieval/classification means 3.

The operation of the system for processing  
program information according to the seventh embodiment  
5 having this construction will be described. Figs. 21 are  
diagrams for illustrating the display operation of the  
program table in the system for processing program  
information according to the eighth embodiment. In this  
eighth embodiment, in Fig. 21A, the program table by day  
10 of week in relation to the prime time (8 o'clock to 10  
o'clock), that is, the program table 108 in which time  
slots only of the prime time (8 o'clock to 10 o'clock) are  
arranged along the vertical axis 102 and the days of week  
(Monday, Tuesday, Wednesday, ...) are arranged along the  
15 horizontal axis 103, is displayed on the three-dimensional  
program table display means 14. "time" representing the  
time slot is displayed in the present attribute display  
column 104 in the vicinity of the program table 108 and  
"CH" representing the channel is displayed in the present  
20 attribute display column 105. "prime time" is displayed  
in the change attribute display column 106 and "day of  
week" is displayed in the change attribute display column  
107. "audience rating" representing the item attribute  
wanted to investigate is displayed in the other attribute  
25 display column 111.

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If the audience selects the audience rating from the attribute display column 111, those attribute instructions are considered input through the attribute input means and the program information retrieval/classification means 3 performs the retrieval of the program information storage means 1 on the basis of the attribute. At this time, the program information retrieval/classification means 3 retrieves the corresponding audience rating from the program information storage means 1 as to each set of attributes of "Monday, Tuesday, Wednesday, Thursday, Friday" and "8 o'clock, 9 o'clock, 10 o'clock" of the attributes of the two axes of the program table. As shown in Fig. 21B, the program table 122 is displayed on the three-dimensional program table display means 14 in a three-dimensional form in accordance with the degree of the audience rating. As this manner, because information is three-dimensionally displayed, the retrieval content can be understood at a glance.

## 20 9th Embodiment

Fig. 22 is a block diagram showing the construction of the ninth embodiment of a system for processing program information according to the present invention. In Fig. 22, the reference 10 denotes attribute input means display means for displaying information input

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to attribute input means, 11 does attribute structure storage means for storing data relative to the structure of the attribute input through the attribute input means, 12 does attribute structure establishment means for establishing the attribute structure, and 15 does attribute structure extraction means for extracting the attribute structure from program information. In this ninth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, the attribute input means 2, program information retrieval/classification means 3, and program table display means 4. The attribute input means display means 10 is connected to the attribute input means 2 to display the input means data and connected to send data to the attribute structure storage means 11. The attribute structure storage means 11 is connected to send data to and receive data from the attribute input means display means 10. The attribute structure storage means 11 is also connected to the attribute structure establishment means 12 and connected to receive the data of the established attribute structure from this attribute structure establishment means 12 and store them.

As for the operation of the system for processing program information according to the ninth embodiment

having this construction, the display operation of the program table like as described in relation to the above sixth embodiment, is performed. That is, because structure data relative to various attributes are stored in the attribute structure storage means 11, if the audience selects and inputs the user classification through the attribute input means 2 in Fig. 17A, the program table in which the user classification was performed is displayed as shown in Fig. 17B. This embodiment is wherein the attribute structure for performing the above user classification is extracted from program information and established.

For instance, it is assumed that the following program information is stored in the program information storage means 1. Here, for simplicity, the form of "program title, program stamp" will be described. For instance, it is assumed that there are data of "pro baseball, Koshien Stadium, Hanshin vs Kyojin" and "pro baseball news, Ya-Chu, Han-Kyo, Hiro-Yoko". "baseball" is commonly included in the program titles. In comparison with this, "Han", "Kyo" and "-" are commonly included in the program details. The attribute structure extraction means extracts the commonly included program titles and program details as the attribute structure of "baseball: Han, Kyo, -", and stores them in the attribute structure



storage means 11 through the attribute structure establishment means.

By this manner, the attribute input means 2 can automatically be generated. For instance, the attribute structure such as "O-157: sprouts, patient, self-governing body" is extracted in program information, thereby, it becomes possible that the program of a topical event such as "O-157" is presented to the user.

#### 10th Embodiment

10 Fig. 23 is a block diagram showing the construction of the tenth embodiment of a system for processing program information according to the present invention. In Fig. 23, the reference 16 denotes past program information preservation means for preserving  
15 information of a program broadcast in the past, 17 does past program information storage means for storing past program information, 18 does past program information acquisition means for acquiring past program information, and 19 does program information selection means for  
20 selecting program information. In this tenth embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means  
25 1, attribute input means 2, program information retrieval/classification means 3, and program table

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display means 4. The past program information  
preservation means 16 receives program information from  
the program information storage means 1 and retrieves  
information of the program broadcast in the past from that  
5 to preserves it for a time. The past program information  
storage means 17 stores past program information preserved  
in the past program information preservation means. The  
program information selection means 19 is for selecting  
and inputting information of the program broadcast in the  
10 past to the past program information acquisition means 18.  
The past program information acquisition means 18 acquires  
information of the program broadcast in the past from the  
past program information means 17 in accordance with the  
selection input of program information from the program  
15 information selection means 19 to send it to the program  
table display means 4.

The operation of the system for processing  
program information according to the tenth embodiment  
having this construction will be described. Figs. 24 are  
20 diagrams for illustrating the display operation of the  
program table in the system for processing program  
information according to the tenth embodiment. In this  
tenth embodiment, at first, the basic program table 101 is  
two-dimensionally displayed on the program table display  
25 means 4 as shown in Fig. 24A. At the position adjacent to

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the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 24A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105.

10           If the audience inputs a predetermined program (in the example of Fig. 24A, Nihon Television in the time zone of 7 o'clock) in the above program table 101 through the program information selection means 19, as shown in Fig. 24B, the picture 123 showing program information of the corresponding program is displayed on the program table display means 4 and operation buttons 124 and 125 for selecting and indicating the outlines of the parts broadcast in the past are displayed. If the audience clicks one of the operation buttons (125 in Fig. 24B), as shown in Fig. 24C, the content of past program information corresponding to that, that is, an outline picture 126 is displayed on the program table display means 4. By this manner, past program information of dramas or the like can be looked by using the system for processing program information.

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## 11th Embodiment

Fig. 25 is a block diagram showing the construction of the eleventh embodiment of a system for processing program information according to the present invention. In Fig. 25, the reference 20 denotes time measurement means for measuring the present time, 21 does program confirmation means for confirming a program, 22 does program image selection means for selecting a program image, and 23 does program image display means for displaying the program image. In this eleventh embodiment, the other construction of the system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, program information retrieval/classification means 3, and program table display means 4. A clock or the like is used for the time measurement means 20 and the measurement result is output to the program confirmation means 21. The program confirmation means 21 receives program information from the program information retrieval/classification means 3 and collate it with data from the time measurement means 20 to confirm whether the program is on the air at present or not, and output the confirmation result to the program image selection means. The program image selection means 22 selects a program image in the case of the confirmation

result from the program confirmation means 21 showing that it is on the air at present, and sends it to the program image 23. The program image display means 23 displays the image of the program.

5           The operation of the system for processing program information according to the eleventh embodiment having this construction will be described. Figs. 26 are diagrams for illustrating the display operation of the program table in the system for processing program  
10 information according to the eleventh embodiment. In this eleventh embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 26A. At the position adjacent to the program table 101 in the display picture,  
15 there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 26A, "time" representing the time slot is displayed in the  
20 present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105.

          If the audience inputs a predetermined program or a channel (in the example of Fig. 26A, the channel of  
25 Nihon Television is selected) in the above program table

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101 through the attribute input means 2, as shown in Fig. 26B, a picture 127 showing program information of the corresponding program, that is, the program on the air at present, is displayed on the program table display means 4.

On the other hand, if the audience designates a predetermined program in the above program table 101 and inputs it through the attribute input means 2, the designated piece of program information is sent from the program information retrieval/classification means 3 to the program confirmation means 21. The program confirmation means 21 collates based on the data from the time measurement means 20 whether the program is on the air at present or not. If it is off the air, because a signal showing that effect is output to the program image selection means 22, no image is displayed on the program image display means 23 and only the program information picture 127 is displayed on the program table display means 4 as shown in Fig. 26B. On the other hand, if it is judged that the program is on the air at present, in the above collation operation in the program confirmation means 21, a signal showing that it is on the air is output to the program image selection means 22. By this manner, the program image selection means 22 operates to select a program image, and an image picture 128 of the program is displayed on the program image display means 23 as shown

in Fig. 26C. Also in this case, the program information picture 127 may be displayed on the program information display means 4.

#### 12th Embodiment

5            Fig. 27 is a block diagram showing the construction of the twelfth embodiment of a system for processing program information according to the present invention. In Fig. 27, the reference 24 denotes program relation information storage means for storing program  
10 relation information, 25 does program relation information retrieval/classification means for retrieving and classifying program relation information, and 20 does time measurement means like as in the above eleventh embodiment. In this twelfth embodiment, the other construction of the  
15 system for processing program information is the same as the above first embodiment and includes program information storage means 1, attribute input means 2, program information retrieval/classification means 3, and program table display means 4. In the program relation  
20 information storage means 24, relation information of storage means programs, for instance, information of sponsors or the like is stored. The program relation information retrieval/classification means 25 receives program information from the program information  
25 retrieval/classification means 3 to retrieve and classify

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program relation information relative to the program from  
the program relation information retrieval/classification  
means 25. A clock or the like is used for the time  
measurement means 20 and measurement result is output to  
5 the program relation information retrieval/classification  
means 25.

The operation of the system for processing  
program information according to the twelfth embodiment  
having this construction will be described. Figs. 28 are  
10 diagrams for illustrating the display operation of the  
program table in the system for processing program  
information according to the twelfth embodiment. In this  
twelfth embodiment, at first, the basic program table 101  
is two-dimensionally displayed on the program table  
15 display means 4 as shown in Fig. 28A. At the position  
adjacent to the program table 101 in the display picture,  
there are provided display columns for the two-axes  
attributes determining the construction of the program  
table displayed at present, that is, present attribute  
20 display columns 104 and 105. In the example of Fig. 28A,  
"time" representing the time slot is displayed in the  
present attribute display column 104 and "CH" representing  
the channel is displayed in the present attribute display  
column 105. The indication of "<NOW!>" given to the time  
25 axis represents the present time zone. Although the

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present time zone indications " NOW!>" are displayed at two positions in Fig. 28A, the reason is that there is "the present" at each time because relative information to the program is retrieved in accordance with a time  
5 schedule as described later.

If the audience inputs a predetermined channel (in the example of Fig. 28A, the channel of Nihon Television is selected) in the above program table 101 through the attribute input means 2, relative information  
10 of the program is displayed on the program table display means 4 in accordance with the time schedule of the selected channel. In the example of Figs. 28, as for the time zone of 6 o'clock of the channel selected by the above channel selection, an advertisement display picture  
15 129 of "Digicam" is displayed on the program table display means 4 as relative information of the program as shown in Fig. 28B. On the other hand, as for the time zone nearly of 8 o'clock according to the time schedule, an outline picture 130 of the program "the third part, Ii Hito" is  
20 displayed on the program table display means 4 as relative information of the program as shown in Fig. 28C. The time schedule in this case is controlled based on the measurement data from the time measurement means 20. What is retrieved as program relation information is previously  
25 established in the program relation information

retrieval/classification means 25.

Although program relation information is displayed by the input by the user and the time in this example, it is also possible that previous inputs by the user are maintained to renew the display of program relation information by the time changing. For instance, if a specific broadcasting station (for instance, Nihon Television) is previously selected, it is also possible to retrieve and display program relation information by the time elapsing after that.

#### 13th Embodiment

Fig. 29 is a block diagram showing the construction of the thirteenth embodiment of a system for processing program information according to the present invention. In Fig. 29, the reference 26 denotes transmission and reception means for transmitting and receiving program information and a program image. To this transmission and reception means 26, attribute input means 2, user information input means 27, program table display means 4 and program image display means 23 are connected to constitute a reception side terminal (that is, a user side terminal). Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that

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transmission and reception means 26 and receiving them  
from that transmission and reception means 26. To this  
transmission and reception means 28, program information  
retrieval/classification means 3 and user information  
5 registration means 29 are connected. Memory means 30 is  
connected to the program information  
retrieval/classification means 3. To this memory means 30,  
renewal information means 31 and program image selection  
means 22 are connected. Time measurement means 20 is  
10 connected to the program image selection means 22. The  
program information retrieval/classification means 3, the  
time measurement means 20, the program image selection  
means 22, the transmission and reception means 28, the  
user information registration means 29, the memory means  
15 30 and the renewal information means 31 constitute a  
server side terminal.

In the user side terminal, the attribute input  
means 2 is for inputting various program information  
retrieval conditions or the like by the audience. The  
20 user information input means 27 is means for the audience  
to input his name, address or the like and those input  
data are transmitted through the transmission and  
reception means 26 and 28 to the server side terminal.  
The program table display means 4 and the program image  
25 display means 23 receive program table data and a program

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image from the transmission and reception means 26 and display them, respectively.

In the server side terminal, the program information retrieval/classification means 3 retrieves and  
5 classifies various data stored in the memory means 30 and sends the result to the transmission and reception means 28. The user information registration means 29 sends user information sent from the transmission and reception means 28 which received user information transmitted from the  
10 user side terminal, to the memory means 30 and registers it. The user registration operation is carried out at an optional time at the audience side. In the memory means 30, various data such as program information, relative information, renewal information, user information,  
15 programs, images and sounds. The renewal information means 31 is for maintaining various renewal matters such as the time change and the content change of a program to the memory means 30, and sending them to the memory means 30. The program image selection means 22 is for selecting  
20 and outputting a program image, that is, image and sound data to the memory means 30. The time measurement means 20 is for controlling with time the operation of the program image means 22. The memory means 30 is memory means like as the program information storage means 1 in  
25 the above storage means embodiment, and stores more kinds

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receives information of the selected program, the program  
information retrieval/classification means 3 performs the  
retrieval as to the memory means 30 to read out program  
information or relative information to the program. These  
5 read-out data of program information or the like are sent  
from the program information retrieval/classification  
means 3 to the transmission and reception means 28 to  
transmit them from the transmission and reception means 28  
to the user side terminal. The transmitted data is  
10 received by the transmission and reception means 26 to be  
displayed on the program table display means 4.

As another operation, the transmission operation  
of the program image is shown. By the above attribute  
input, a program before the time indicated by the present  
15 time " NOW!>" is input as the attribute. In such a case,  
programs that had been on the air are recorded and, a  
favorite program is selected, images of the program can be  
looked. In this case, the set of the time measurement  
means 20 and the program image selection means 22 is  
20 constituted by a video device, which records all programs  
on the air and stores the data in the memory means 30. If  
a program that had already been on the air is selected  
through the attribute input means as described above, the  
program information is transmitted and received through  
25 the transmission and reception means 26 and 28, and image

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data of the corresponding program are retrieved from the memory means 30 through the program information retrieval/classification means 3 to transmit them back. On the reception side, an image picture 128 is displayed  
5 on the program image display means 23 as shown in Fig. 30B.

As still another operation, as described in the above eleventh embodiment, if the program meeting the time indicated by the present time " NOW!>" is input as the attribute through the attribute input means 2, because the  
10 program is on the air at present, the program image selection means 22 operates to select the image and sound of the program and instruct the memory means 30. By this manner, the corresponding image and sound (program image) are read out from the memory means 30 and sent through the  
15 program information retrieval/classification means 3 to the transmission and reception means 28 to be transmitted to the reception side. On the reception side, the image picture 128 of the program is displayed on the program image display means 23 by the similar manner to Fig. 30B.  
20 By this manner, a program forgotten to reserve for recording or a program that had ended can be viewed at any time.

#### 14th Embodiment

Fig. 31 is a block diagram showing the  
25 construction of the fourteenth embodiment of a system for

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processing program information according to the present invention. In Fig. 31, the reference 26 denotes transmission and reception means for transmitting and receiving program information and a program image. To this transmission and reception means 26, attribute input means 2, image sequence input means 32, and program table display means 4 are connected to constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 3 and image sequence registration means 33 are connected. Memory means 30 and image sequence storage means 34 are connected to the program information retrieval/classification means 3. The program information retrieval/classification means 3, the transmission and reception means 28, the memory means 30, the image sequence registration means 33, and the image sequence storage means 34 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information



retrieval conditions or the like by the audience. The image sequence input means 32 is means for inputting an image sequence made by the user and those input data are transmitted through the transmission and reception means 26 and 28 to the server side terminal. The program table display means 4 receives program table data from the transmission and reception means 26 and display them, respectively.

In the server side terminal, the program information retrieval/classification means 3 retrieves and classifies various data stored in the memory means 30 and the image sequence storage means 34 and sends the result to the transmission and reception means 28. The image sequence storage means 34 stores the image sequence received from the user side terminal and sends the image sequence data to the program information retrieval/classification means 3. The image sequence registration means 33 is for sending the image sequence transmitted from the user side terminal and received by the transmission and reception means 28 and registering it.

The operation of the system for processing program information according to the fourteenth embodiment having this construction will be described. Figs. 32 are diagrams for illustrating the display operation of the program table in the system for processing program

information according to the fourteenth embodiment. In this fourteenth embodiment, at first, a program table 131 in the condition that a station name is added to the basic program table is two-dimensionally displayed on the program table display means 4 as shown in Fig. 32A. This program table 131 has an extra user channel 132 in addition to the existing channels. At the position adjacent to the program table 131 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 32A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105.

The image sequence made by the user is input by the image sequence input means 32 in the user side terminal and the data is sent to the transmission and reception means 26. The transmission and reception means 26 transmits them to the server side terminal. In the server side terminal, the transmission and reception means 28 receives the transmitted data of the image sequence to send those data to the image sequence registration means 33. The image sequence registration means 33 sends the

image sequence transmitted from the user side terminal and received by the transmission and reception means 28, to the image sequence storage means 34 and registers it. The registered image sequence is stored in the image sequence  
5 storage means 34.

Here, if the audience inputs a predetermined program (in the example of Fig. 32A, the user channel 132 in the time zone of 6 o'clock is selected) in the user channel 132 in the above program table 131 through the  
10 attribute input means 2, after the server side transmission and reception means 28 receives information of the selected program, the program information retrieval/classification means 3 performs the retrieval as to the memory means 30 and the image sequence storage  
15 means 34. Because the designated piece of program information is stored in the image sequence storage means 34, the program information retrieval/classification means 3 reads out the corresponding data from the image sequence storage means 34. These read-out image sequence data are  
20 sent from the program information retrieval/classification means 3 to the transmission and reception means 28 to transmit them from the transmission and reception means 28 to the user side terminal. An image sequence picture 133 that is the transmitted data is received by the  
25 transmission and reception means 26 and displayed on the

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program table display means 4 as shown in Fig. 32B.

#### 15th Embodiment

Fig. 33 is a block diagram showing the construction of the fifteenth embodiment of a system for processing program information according to the present invention. In Fig. 33, the reference 26 denotes transmission and reception means for transmitting and receiving program information and a program image. To this transmission and reception means 26, attribute input means 2 and program table display means 4 are connected to constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 3 is connected. Memory means 30 and selected program information registration means 35 are connected to the program information retrieval/classification means 3. Selected program information storage means 36 is connected to the selected program information registration means 35. Furthermore, to this selected program information storage means 36, selected program information calculation means

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37 is connected. The program information  
retrieval/classification means 3, the transmission and  
reception means 28, the memory means 30, the selected  
program information registration means 35, the selected  
5 program information storage means 36, and the selected  
program information calculation means 37 constitute a  
server side terminal.

In the user side terminal, the attribute input  
means 2 is for inputting various program information  
10 retrieval conditions or the like by the audience. The  
program table display means 4 receives program table data  
from the transmission and reception means 26 and display  
them, respectively.

In the server side terminal, the program  
15 information retrieval/classification means 3 retrieves and  
classifies various data stored in the memory means 30 and  
sends the result to the transmission and reception means  
28. The selected program information registration means  
35 is for sending information of the program selected by  
20 the user to the selected program information storage means  
36 and registering it. The selected program information  
storage means 36 stores selected program information  
received from the user side terminal and sends the  
selected program information to the selected program  
25 information calculation means 37. The selected program

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information calculation means 37 is for calculating the number of people viewing the same program and the audience rating in relation to program information selected by the user and sending the result to the program information

5 retrieval/classification means 3.

The operation of the system for processing program information according to the fifteenth embodiment having this construction will be described. The description of the operation in this fifteenth embodiment is almost the same as the above description by using Fig. 3 or Fig. 21. For instance, in view of Fig. 21, at first, in Fig. 21A, the program table by day of week in relation to the prime time (8 o'clock to 10 o'clock), that is, the program table 108 in which the time slots only in the prime time (8 o'clock to 10 o'clock) are arranged along the vertical axis 102 and the days of week (Monday, Tuesday, Wednesday, ...) are arranged along the horizontal axis 103, is displayed on the program table display means 4. At the position adjacent to the program table 108 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 21A, "time" representing the time slot is displayed in the present attribute display column 104 and

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"CH" representing the channel is displayed in the present attribute display column 105. Another display may be performed in the picture.

Selected program information made by the user is  
5 input through the attribute input means 2 in the user side terminal and the data is sent to the transmission and reception means 26. The transmission and reception means 26 transmits them to the server side terminal. In the server side terminal, the transmission and reception means  
10 28 receives the transmitted data of selected program information and sends the data to the selected program information registration means 35. The selected program information registration means 35 sends selected program information transmitted from the user side terminal and  
15 received by the transmission and reception means 28, to the selected program information storage means 36 and registers it. Selected program information registered is stored in the selected program information storage means 36.

20 Here, if the audience inputs a predetermined program in the above program table 108 through the attribute input means 2, after the server side transmission and reception means 28 receives the selected program, the program information retrieval/classification  
25 means 3 sends the program to the selected program

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information registration means 35 and performs the  
retrieval as to the memory means 30 to read out program  
information or relative information to the program. On  
the other hand, the selected program information  
5 registration means 35 which received selected program  
information from the program information  
retrieval/classification means 3 sends the data to the  
selected program information storage means 36. The  
selected program information calculation means 37  
10 calculates the number of people viewing the same program  
and the audience rating as to the program on the basis of  
the data renewal in the selected program information  
storage means 36 and sends the result to the program  
information retrieval/classification means 3. The program  
15 information retrieval/classification means 3 sends the  
data of program information or the like read out from the  
memory means 30 and the calculation result sent from the  
selected program information calculation means 37 to the  
transmission and reception means 28 together and they are  
20 transmitted from the transmission and reception means 28  
to the user side terminal. The selected program  
information picture that is the transmitted data is  
received by the transmission and reception means 26 and  
displayed on the program table display means 4 in the  
25 manner as shown in Fig. 4B or in the manner as shown in

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Fig. 21B.

16th Embodiment

Fig. 34 is a block diagram showing the construction of the sixteenth embodiment of a system for processing program information according to the present invention. In Fig. 34, the reference 26 denotes transmission and reception means for transmitting and receiving program information. To this transmission and reception means 26, storage means 38 for program information including a program retrieval index is connected. To this storage means 38 for program information including a program retrieval index, program information retrieval/classification means 3 is connected. Attribute input means 2 and program table display means 4 are connected to the program information retrieval/classification means 3. Those functional parts constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, storage means 39 for program information including a program retrieval index is connected. Generation means 41 for program

information including a program retrieval index is connected to the storage means 39 for program information including a program retrieval index. In Fig. 34, the reference 40 denotes program retrieval index storage means 40. To this program retrieval index storage means 40, program retrieval index generation means 42. Furthermore, to this program retrieval index generation means 42, program information storage means 1 is connected. The program information storage means 1, the transmission and reception means 28, the storage means 39 for program information including a program retrieval index, the generation means 41 for program information including a program retrieval index, the program retrieval index storage means 40, and the program retrieval index generation means 42 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The program information retrieval/classification means 3 is for retrieving and classifying program information including a program retrieval index stored in the storage means 38 for program information including a program retrieval index. The program table display means 4 receives the program table data from the program information retrieval/classification means 3 to display

them.

In the server side terminal, the storage means 39 for program information including a program retrieval index is for storing program information including a program retrieval index generated on the server side. The generation means 41 for program information including a program retrieval index is for generating program information including a program retrieval index by adding an index for the program retrieval to program information sent from the program information storage means 1. The program retrieval index storage means 40 is for storing the data relative to the index to be added to program information. The program retrieval index generation means 42 is for generating the data relative to the index to be added to program information.

The operation of the system for processing program information according to the sixteenth embodiment having this construction will be described. In this sixteenth embodiment, on the server side, program information stored in the program information storage means 1 is received by the program retrieval index generation means 42 and the index for the program retrieval is generated based on the above program information and the generated program retrieval index is sent to the program retrieval index storage means 40 to be

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stored. The data from the program information storage means 1 and the data from the program retrieval index storage means 40 are sent to the generation means 41 for program information including a program retrieval index to  
5 generate program information including a program retrieval index.

Program information including a program retrieval index generated on the server side is sent from the storage means 39 for program information including a  
10 program retrieval index to the transmission and reception means 28 and transmitted from the transmission and reception means 28 to the user side terminal. In the user side terminal, the transmission and reception means 26 receives the transmitted data of the above program  
15 information including a program retrieval index and those data are stored in the storage means 38 for program information including a program retrieval index.

In the program information retrieval operation based on the program table, if the audience inputs a  
20 program retrieval index as to a predetermined program in the program table (it can be the program table 101 used in the above embodiments) through the attribute input means 2, the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for  
25 program information including a program retrieval index to

read out program information. The read-out program information is sent to the program table display means 4 to be displayed there.

#### 17th Embodiment

5 Fig. 35 is a block diagram showing the construction of the seventeenth embodiment of a system for processing program information according to the present invention. In Fig. 35, the reference 26 denotes transmission and reception means for transmitting and  
10 receiving program information. To this transmission and reception means 26, storage means 38 for program information including a program retrieval index is connected. To this storage means 38 for program information including a program retrieval index, program  
15 information retrieval/classification means 3 and user attribute adaptation means 43 are connected. Attribute input means 2, program table display means 4 and the user attribute adaptation means 43 are connected to the program information retrieval/classification means 3. User  
20 attribute storage means 44 is connected to the attribute input means 2. This user attribute storage means 44 is connected so that data can be sent to and received from the user attribute adaptation means 43. Those functional parts constitute a user side terminal. Reference 28  
25 denotes transmission and reception means disposed

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correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, storage means 39 for program information including a program retrieval index is connected. Generation means 41 for program information including a program retrieval index is connected to the storage means 39 for program information including a program retrieval index. In Fig. 35, the reference 40 denotes program retrieval index storage means 40. To this program retrieval index storage means 40, program retrieval index generation means 42. Furthermore, to this program retrieval index generation means 42, program information storage means 1 is connected. The program information storage means 1, the transmission and reception means 28, the storage means 39 for program information including a program retrieval index, the generation means 41 for program information including a program retrieval index, the program retrieval index storage means 40, and the program retrieval index generation means 42 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The

program information retrieval/classification means 3 is  
for retrieving and classifying program information  
including a program retrieval index stored in the storage  
means 38 for program information including a program  
5 retrieval index. The program table display means 4  
receives the program table data from the program  
information retrieval/classification means 3 to display  
them. The user attribute storage means 44 is for  
maintaining the data relative to the user attribute in the  
10 user side terminal. The user attribute adaptation means  
is for examining whether the user attribute is adaptable  
or not upon the retrieval of program information.

In the server side terminal, the storage means 39  
for program information including a program retrieval  
15 index is for storing program information including a  
program retrieval index generated on the server side. The  
generation means 41 for program information including a  
program retrieval index is for generating program  
information including a program retrieval index by adding  
20 an index for the program retrieval to program information  
sent from the program information storage means 1. The  
program retrieval index storage means 40 is for storing  
the data relative to the index to be added to program  
information. The program retrieval index generation means  
25 42 is for generating the data relative to the index to be

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added to program information.

The operation of the system for processing program information according to the seventeenth embodiment having this construction will be described. In this seventeenth embodiment, on the server side, program information stored in the program information storage means 1 is received by the program retrieval index generation means 42 and the index for the program retrieval is generated based on the above program information and the generated program retrieval index is sent to the program retrieval index storage means 40 to be stored. The data from the program information storage means 1 and the data from the program retrieval index storage means 40 are sent to the generation means 41 for program information including a program retrieval index to generate program information including a program retrieval index.

Program information including a program retrieval index generated on the server side is sent from the storage means 39 for program information including a program retrieval index to the transmission and reception means 28 and transmitted from the transmission and reception means 28 to the user side terminal. In the user side terminal, the transmission and reception means 26 receives the transmitted data of the above program

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information including a program retrieval index and those data are stored in the storage means 38 for program information including a program retrieval index.

In the program information retrieval operation  
5 based on the program table, if the audience inputs a program retrieval index as to a predetermined program in the program table (it can be the program table 101 used in the above embodiments) through the attribute input means 2, the program information retrieval/classification means 3  
10 retrieves the selected program in the storage means 38 for program information including a program retrieval index. At this time, the user attribute adaptation means 43 receives the user attribute data from the user attribute storage means 44 to examine whether the program subjected  
15 to the retrieval adapts to the user attribute or not. If the user attribute is adaptable, program information is read out. The read-out program information is sent to the program table display means 4 to be displayed there. On the other hand, if the user attribute is not adaptable,  
20 program information is not read out and the program information is not displayed on the program table display means 4.

#### 18th Embodiment

Fig. 36 is a block diagram showing the  
25 construction of the eighteenth embodiment of a system for

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processing program information according to the present invention. In Fig. 36, the reference 26 denotes transmission and reception means for transmitting and receiving program information. To this transmission and reception means 26, storage means 38 for program information including a program retrieval index is connected. To this storage means 38 for program information including a program retrieval index, program information retrieval/classification means 3 is connected. Attribute input means 2, and program table display means 4 are connected to the program information retrieval/classification means 3. Those functional parts constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 45. To this program information retrieval/classification means 45, storage means 39 for program information including a program retrieval index is connected. Generation means 41 for program information including a program retrieval index is connected to the storage means 39 for program

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information including a program retrieval index. In Fig. 36, the reference 40 denotes program retrieval index storage means 40. To this program retrieval index storage means 40, program retrieval index generation means 42.

5 Furthermore, to this program retrieval index generation means 42, program information storage means 1 is connected. The program information storage means 1, the transmission and reception means 28, the storage means 39 for program information including a program retrieval index, the

10 generation means 41 for program information including a program retrieval index, the program retrieval index storage means 40, the program retrieval index generation means 42, and the program information retrieval/classification means 45 constitute a server side

15 terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The program information retrieval/classification means 3 is

20 for retrieving and classifying program information including a program retrieval index stored in the storage means 38 for program information including a program retrieval index. The program table display means 4 receives the program table data from the program

25 information retrieval/classification means 3 to display

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them.

In the server side terminal, the storage means 39 for program information including a program retrieval index is for storing program information including a program retrieval index generated on the server side. The generation means 41 for program information including a program retrieval index is for generating program information including a program retrieval index by adding an index for the program retrieval to program information sent from the program information storage means 1. The program retrieval index storage means 40 is for storing the data relative to the index to be added to program information. The program retrieval index generation means 42 is for generating the data relative to the index to be added to program information. The program information retrieval/classification means 45 is for retrieving program information including a program retrieval index stored in the storage means 39 for program information including a program retrieval index.

The operation of the system for processing program information according to the eighteenth embodiment having this construction will be described. In this eighteenth embodiment, on the server side, program information stored in the program information storage means 1 is received by the program retrieval index

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generation means 42 and the index for the program  
retrieval is generated based on the above program  
information and the generated program retrieval index is  
sent to the program retrieval index storage means 40 to be  
5 stored. The data from the program information storage  
means 1 and the data from the program retrieval index  
storage means 40 are sent to the generation means 41 for  
program information including a program retrieval index to  
generate program information including a program retrieval  
10 index.

Program information including a program retrieval  
index generated on the server side is sent from the  
storage means 39 for program information including a  
program retrieval index to the transmission and reception  
15 means 28 and transmitted from the transmission and  
reception means 28 to the user side terminal. In the user  
side terminal, the transmission and reception means 26  
receives the transmitted data of the above program  
information including a program retrieval index and those  
20 data are stored in the storage means 38 for program  
information including a program retrieval index.

In the program information retrieval operation  
based on the program table, if the audience inputs a  
program retrieval index as to a predetermined program in  
25 the program table (it can be the program table 101 used in

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the above embodiments) through the attribute input means 2, the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index to read out program information. The read-out program information is sent to the program table display means 4 to be displayed there. However, if, in the user side terminal, the corresponding program information is not retrieved even when the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index, the retrieval of program information is performed in the server side terminal. In this case, the attribute data input in the user side terminal are sent from the program information retrieval/classification means 3 to the transmission and reception means 26, and after that, transmitted from the transmission and reception means 26 to the server side terminal. This attribute data are sent to the program information retrieval/classification means 45 in the server side terminal. The program information retrieval/classification means 45 on the server side performs the retrieval in the storage means 39 for program information including a program retrieval index and if there is program information, it is read out. The read-

out program information is transmitted from the  
transmission and reception means 28 to the user side  
terminal and sent to the program table display means 4 in  
the audience terminal to be displayed there. By this  
5 manner, even if the retrieval of program information  
including a program retrieval index ended in failure in  
the user side terminal, the similar program information  
retrieval can be performed in the server side terminal so  
the certainty of the operation increases.

10 19th Embodiment

Fig. 37 is a block diagram showing the  
construction of the nineteenth embodiment of a system for  
processing program information according to the present  
invention. In Fig. 37, the reference 26 denotes  
15 transmission and reception means for transmitting and  
receiving program information. To this transmission and  
reception means 26, storage means 38 for program  
information including a program retrieval index is  
connected. To this storage means 38 for program  
20 information including a program retrieval index, program  
information retrieval/classification means 3 and user  
attribute adaptation means 43 are connected. Attribute  
input means 2, program table display means 4 and the user  
attribute adaptation means 43 are connected to the program  
25 information retrieval/classification means 3. User

attribute storage means 44 is connected to the attribute input means 2. This user attribute storage means 44 is connected so that data can be sent to and received from the user attribute adaptation means 43. Those functional parts constitute a user side terminal. Reference 28 denotes transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and a program image to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information retrieval/classification means 45. To this program information retrieval/classification means 45, storage means 39 for program information including a program retrieval index is connected. Generation means 41 for program information including a program retrieval index is connected to the storage means 39 for program information including a program retrieval index. In Fig. 37, the reference 40 denotes program retrieval index storage means 40. To this program retrieval index storage means 40, program retrieval index generation means 42. Furthermore, to this program retrieval index generation means 42, program information storage means 1 is connected. The program information storage means 1, the transmission and reception means 28, the storage means 39 for program

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information including a program retrieval index, the generation means 41 for program information including a program retrieval index, the program retrieval index storage means 40, the program retrieval index generation means 42, and the program information retrieval/classification means 45 constitute a server side terminal.

In the user side terminal, the attribute input means 2 is for inputting various program information retrieval conditions or the like by the audience. The program information retrieval/classification means 3 is for retrieving and classifying program information including a program retrieval index stored in the storage means 38 for program information including a program retrieval index. The program table display means 4 receives the program table data from the program information retrieval/classification means 3 to display them. The user attribute storage means 44 is for maintaining the data relative to the user attribute in the user side terminal. The user attribute adaptation means is for examining whether the user attribute is adaptable or not upon the retrieval of program information.

In the server side terminal, the storage means 39 for program information including a program retrieval index is for storing program information including a

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program retrieval index generated on the server side. The generation means 41 for program information including a program retrieval index is for generating program information including a program retrieval index by adding an index for the program retrieval to program information sent from the program information storage means 1. The program retrieval index storage means 40 is for storing the data relative to the index to be added to program information. The program retrieval index generation means 42 is for generating the data relative to the index to be added to program information. The program information retrieval/classification means 45 is for retrieving program information including a program retrieval index stored in the storage means 39 for program information including a program retrieval index.

The operation of the system for processing program information according to the nineteenth embodiment having this construction will be described. In this nineteenth embodiment, on the server side, program information stored in the program information storage means 1 is received by the program retrieval index generation means 42 and the index for the program retrieval is generated based on the above program information and the generated program retrieval index is sent to the program retrieval index storage means 40 to be

stored. The data from the program information storage means 1 and the data from the program retrieval index storage means 40 are sent to the generation means 41 for program information including a program retrieval index to  
5 generate program information including a program retrieval index.

Program information including a program retrieval index generated on the server side is sent from the storage means 39 for program information including a  
10 program retrieval index to the transmission and reception means 28 and transmitted from the transmission and reception means 28 to the user side terminal. In the user side terminal, the transmission and reception means 26 receives the transmitted data of the above program  
15 information including a program retrieval index and those data are stored in the storage means 38 for program information including a program retrieval index.

In the program information retrieval operation based on the program table, if the audience inputs a  
20 program retrieval index as to a predetermined program in the program table (it can be the program table 101 used in the above embodiments) through the attribute input means 2, the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for  
25 program information including a program retrieval index.

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At this time, the user attribute adaptation means 43 receives the user attribute data from the user attribute storage means 44 to examine whether the program subjected to the retrieval adapts to the user attribute or not. If the user attribute is adaptable, program information is read out. The read-out program information is sent to the program table display means 4 to be displayed there. On the other hand, if the user attribute is not adaptable, program information is not read out and the program information is not displayed on the program table display means 4.

In the above retrieval operation, the different retrieval result is obtained according to the adaptation or non-adaptation of the user attribute. In the case of the adaptable user attribute, if, in the user side terminal, the corresponding program information is not retrieved even when the program information retrieval/classification means 3 retrieves the selected program in the storage means 38 for program information including a program retrieval index, the retrieval of program information is performed in the server side terminal. In this case, the attribute data input in the user side terminal are sent from the program information retrieval/classification means 3 to the transmission and reception means 26, and after that, transmitted from the

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transmission and reception means 26 to the server side terminal. This attribute data are sent to the program information retrieval/classification means 45 in the server side terminal. The program information

5 retrieval/classification means 45 on the server side performs the retrieval in the storage means 39 for program information including a program retrieval index and if there is program information, it is read out. The read-out program information is transmitted from the

10 transmission and reception means 28 to the user side terminal and sent to the program table display means 4 in the audience terminal to be displayed there. By this manner, in addition to performing the certain retrieval in the user side terminal by examining the adaptation of the

15 user attribute, even if the retrieval of program information including a program retrieval index ended in failure, the similar program information retrieval can be performed in the server side terminal so the certainty of the operation increases.

20 20th Embodiment

Fig. 38 is a block diagram showing the construction of the twentieth embodiment of a system for processing program information according to the present invention. In Fig. 38, the reference 1 denotes program

25 information storage means for storing received program

information, 2 does attribute input means through which attribute information to be used as two-axes attributes of a program table and the others of attribute information are input, 3 does program information

- 5 retrieval/classification means for retrieving or classifying a program in program information on the basis of input attribute information to make the program table, and 4 does program table display means for displaying the made program table. The reference 22 denotes program
- 10 image selection means, 20 does time measurement means, 46 does program image recording means for recording a program image, 47 does program video-recording information retrieval/classification means, and 23 does program image display means for displaying the program image. The
- 15 program image recording means 46 is constituted by, for instance, a video device for recording an image of the program determined by a timer control under the control of the time measurement means 20. The program image recording means 46 is also constructed to record a program
- 20 image by an instruction from the program information retrieval/classification means 3. The program image selection means 22 starts the program image recording means 46 by receiving an instruction from the program information retrieval/classification means 3. The program
- 25 image display means 23 displays the image of the program.

The operation of the system for processing program information according to the twentieth embodiment having this construction will be described. Figs. 39 are diagrams for illustrating the display operation of the program table in the system for processing program information according to the twentieth embodiment. In this twentieth embodiment, at first, the basic program table 101 is two-dimensionally displayed on the program table display means 4 as shown in Fig. 39A. At the position adjacent to the program table 101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105. In the example of Fig. 39A, "time" representing the time slot is displayed in the present attribute display column 104 and "CH" representing the channel is displayed in the present attribute display column 105.

Here, if the audience selects a certain program through the attribute input means 2, the program information retrieval/classification means 3 retrieves the program as to the program image storage means 1. If the program is recorded, a play back button 135 is displayed with program information on the program information picture 134 of the program table display means 4 as shown

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in Fig. 39B. If it is not recorded and if it is off the  
air at present, a recording reservation button 136 is  
displayed on the program information picture 134 of the  
program table display means 4. If it is on the air, a  
5 recording button 137 is displayed on the program  
information picture 134 of the program table display means  
4. Based on the button display as described above, if the  
audience clicks the play back button 135, this operation  
information is sent through the program information  
10 retrieval/classification means 3 to the program image  
recording means 46 to play back the program. If the  
recording reservation button 136 is clicked, this  
operation information is sent through the program  
information retrieval/classification means 3 to the  
15 program image recording means 46 to reserve the program  
for recording. By this manner, the program image  
recording means 46 and the time measurement means 20 are  
set. Furthermore, if the recording button 137 is clicked,  
this operation information is sent through the program  
20 information retrieval/classification means 3 and the  
program image selection means 22 to the program image  
recording means 46 to record the program immediately. By  
this manner, even in the case of no time for viewing the  
program, or the like, it can be recorded by the manner  
25 such as the recording reservation to view the program

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later.

Figs. 40 show display conditions of the program  
table display means 4 in the case of performing the above  
recording reservation operation. In these drawings, if  
5 the recording reservation button 136 is operated by  
clicking in the program information picture 134 shown in  
Fig. 40A to reserve the program for recording, a recording  
reservation program table 139 is made as shown in Fig. 40B.  
In this recording reservation program table 139, there are  
10 provided recording relation columns 138 for displaying a  
recording or recording reservation table. If recording  
reservations are performed as to plural programs, in the  
recording relation columns 138 of the recording  
complementary-angle program table 139, program information  
15 reserved for recording is displayed along the time. By  
this manner, it becomes easy to distinguish the program  
reserved for recording.

#### 21st Embodiment

Fig. 41 is a block diagram showing the  
20 construction of the twenty-first embodiment of a system  
for processing program information according to the  
present invention. In Fig. 41, the reference 1 denotes  
program information storage means for storing received  
program information, 2 does attribute input means through  
25 which attribute information to be used as two-axes

attributes of a program table and the others of attribute  
information are input, 3 does program information  
retrieval/classification means for retrieving or  
classifying a program in program information on the basis  
5 of input attribute information to make the program table,  
and 4 does program table display means for displaying the  
made program table. The reference 22 denotes program  
image selection means, 20 does time measurement means, and  
48 does viewed program information storage means. The  
10 viewed program information storage means 48 is for  
recording information of the program viewed by the  
audience. The program image selection means 22 registers  
data to the viewed program information storage means 48 by  
receiving an instruction from the program information  
15 retrieval/classification means 3.

The operation of the system for processing  
program information according to the twenty-first  
embodiment having this construction will be described.  
Figs. 42 are diagrams for illustrating the display  
20 operation of the program table in the system for  
processing program information according to the twenty-  
first embodiment. In this twenty-first embodiment, at  
first, the basic program table 101 is two-dimensionally  
displayed on the program table display means 4 as shown in  
25 Fig. 42A. At the position adjacent to the program table

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101 in the display picture, there are provided display columns for the two-axes attributes determining the construction of the program table displayed at present, that is, present attribute display columns 104 and 105.

5 In the example of Fig. 42A, "time" representing the time slot is displayed in the present attribute display column 104, "CH" representing the channel is displayed in the present attribute display column 105, and "day of week" as the other attribute information is displayed in the change  
10 attribute display column 107. At the position (adjacent to the right side) adjacent to the above program table 101, there is displayed an operation button 140 for calling "program having ever been viewed".

Here, if the audience clicks the above operation  
15 button 140, on the program table display means 4, as shown in Fig. 42B, there is displayed a program table 141 in which the program information display columns 109 corresponding to the programs having ever been viewed are different in color from the other programs. If the  
20 audience selects a certain program through the attribute input means 2, the program information retrieval/classification means 3 retrieves the program as to the program image storage means 1 to display the program information on the program table display means 4.  
25 By this manner, the programs having ever been viewed

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become clear at a glance in the program table 141 and this can be utilized for selecting the program wanted to view next.

Fig. 43 is a diagram showing the user classification program table 120 (already described with reference to Fig. 17) when the user classification operation is designated in the program table shown in Fig. 42A, and the construction of the program table is basically the same as that shown in Fig. 17B. In this embodiment, by performing the click operation of the operation button 140 for calling the above "program having ever been viewed", also in this user classification program table 120, columns 142 for the programs viewed last times are added to the lowermost columns and program information of the programs viewed last times is displayed in those columns 142. By this manner, as for the programs inserted in the user classification, the distinction of programs having ever been viewed or not yet being viewed can easily be performed and this can be utilized for selecting the program wanted to view next.

#### 22nd Embodiment

Fig. 44 is a block diagram showing the construction of the twenty-second embodiment of a system for processing program information according to the present invention. In Fig. 44, the reference 1 denotes

program information storage means for storing received  
program information, and 4 does program table display  
means for displaying the made program table. The  
reference 50 denotes program information classification  
5 establishment means for establishing classification  
information required for classifying programs, 51 does  
program classification information storage means for  
storing program classification information, and 52 does  
program information classification means for classifying  
10 programs in accordance with a predetermined rule. To the  
program classification information establishment means 50,  
for instance, program classification information is input  
by the user or established at the time of constructing the  
system. Program information 54 is stored in the program  
15 information storage means 1 and program classification  
information 55 is stored in the program classification  
information storage means 51. The program information  
classification means 52 includes adaptation degree  
calculation means 53 for calculating the adaptation degree  
20 of a program upon the classification operation.

The structure of program classification  
information 55 will be described. Program classification  
information 55 comprises, for instance, a set of a  
representative word (example: fishing) representing the  
25 meaning of the classification and a line of characteristic

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words (example: FISHING, spot, fishing, Fishing) for the collation with program information. By collating these characteristic words with program information, the adaptation degree of each piece of program information

5 with the program classification information can be calculated. For instance, the sum of the numbers of times of the appearances of the characteristic words can be used as the value of the adaptation degree. In the adaptation degree calculation means 53, by comparing this value with

10 the threshold value of the adaptation degree established as to the program classification, the set of program information to be classified in program classification information of a certain program can be specified. In this case, as for one piece of program classification

15 information, all pieces of program information the adaptation values of which exceed the threshold value are classified. Fig. 45 is an image diagram showing the process operation content of the classification method (or classification operation) by the adaptation degree

20 calculation means 53. As shown in this drawing, as program classification information 55, "representative word: fishing" and "characteristic word: FISHING, secret point, fishing, Fishing, sweetfish" are established. The program information classification means 52 loads program

25 information 1 to 3 from program information each 1 and

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calculates the adaptation degrees as to respective pieces of program information. As a result, the adaptation degree of 4 is given to program information 1, the adaptation degree of 1 to program information 2, and the adaptation degree of 0 to program information 3.

Therefore, the threshold value established in the program information classification means 52 and the adaptation degree of each piece of program information are compared with each other, and the result that program information 1 is classified into "fishing" and program information 2 is also classified into "fishing" but program information 3 is not classified into "fishing", is obtained. Because the classification of program information is performed by such a classification method, there is also the case that one piece of program information is classified into plural pieces of program classification information. Fig. 46 is an image diagram of the classification result of program information by the program information classification means 52. In classified program information (group) 56, program information connected by a line to the same program classification information represents that it belongs the same classification. Program information in which two or more lines are drawn from one piece of program information represents that it is classified into plural pieces of program classification information.

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Program classification information itself may be predetermined for the system, or established by the user with the program classification information establishment means. They may also be mixed.

5 By the construction with including such program information classification means 52, program information 54 can be classified as to program classification information 55, the program table having the line of established program classification information as one axis  
10 of the program table can be made and displayed on the program table display means 4. On the other axis of the program table, the order of the adaptation degrees as to respective pieces of program classification information may be shown, or by showing the line of other pieces of  
15 program classification information, the accuracy of the program can be grasped from plural points of view, and it can be grasped more accurately.

In any form of the program table, among the programs displayed therein, it becomes possible separately  
20 to display only those classified into a certain piece of program classification information.

#### 23rd Embodiment

Fig. 47 is a block diagram showing the construction of the twenty-third embodiment of a system  
25 for processing program information according to the



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present invention. The program information processing according to this embodiment has the construction that program classification information extraction means 57 and program classification information generation means 58 are provided in place of the program classification information establishment means 50 of the system for processing program information according to the above twenty-second embodiment. The program classification information generation means 58 includes relative key word extraction means 59. The other construction is the same as the above twenty-second embodiment and includes program information storage means 1, program table display means 4 for displaying the program table, program classification information storage means 51, program information classification means 52, and adaptation degree calculation means 53. The program classification information extraction means 57 obtains program information from the program information storage means 1 and extracts data to be program classification information from this program information. The program classification information generation means 58 extracts a characteristic word or the like to be program classification information by the relative key word extraction means 59 to make program classification information. In this manner, in this embodiment, the system for processing program information

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itself can generate program classification information in a self-complete manner.

In the operation of this twenty-third embodiment, a specified set of program information in program information stored in the program information storage means 1, for instance, "program liked by a certain person" or the like is designated. A characteristic word is extracted from the designated set of program information by the relative key word extraction means 59, and by establishing an appropriate representative word by the user, program classification information can be generated. There are various methods for the practical equipment of the relative key word extraction means 59.

By including such program classification information extraction means 57 and program classification information generation means 58, a new piece of program classification information can easily be defined by user by designating a proper program group by the user so the trouble of designating a characteristic word can be omitted. Because the characteristic word is extracted from real program information, there is also the advantage that it is easy to obtain program classification information capable of classifying the program more accurately.

25

24th Embodiment

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Fig. 48 is a block diagram showing the construction of the twenty-fourth embodiment of a system for processing program information according to the present invention. In Fig. 48, the reference 26 denotes transmission and reception means for transmitting and receiving program information and program classification information. To this transmission and reception means 26, program classification information storage means 51 and program table display means 4 are connected to constitute a reception side terminal (that is, a user side terminal). 28 does transmission and reception means disposed correspondingly to the above transmission and reception means 26 for transmitting program information and program classification information to that transmission and reception means 26 and receiving them from that transmission and reception means 26. To this transmission and reception means 28, program information classification means 52 is connected. Program information storage means 1 is connected to the program information classification means 52. The program information storage means 1 and the program information classification means 52 constitute a server side terminal.

Because of having this construction, the system for processing program information that includes the program information classification means 52 according to

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this embodiment and is constructed to classify program information, can be used in the surroundings that the server and the user terminal cooperate with each other. In this case, program classification information is

5 transmitted from the user side terminal to the server side terminal. Program classification information to be transmitted may be any of those predetermined in the system, established by the user, and extracted from the program information group designated by the user.

10 The server side terminal that received program classification information classifies the program information groups stored in the program information storage means 1 in accordance with those pieces of program classification information. By transmitting only program  
15 information classified into program classification information transmitted from the user side terminal, to the user side terminal to be displayed on the program table display means 4 in the user side terminal, in comparison with the case that all program tables are  
20 transmitted, the data quantity to be transmitted can remarkably be decreased.

As described above, according to the present invention, because the system for processing program information is constructed to include the program  
25 information storage means for storing program information,

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and the program table display means for two-dimensionally displaying the program table following two axes in accordance with two attributes among attributes given to each piece of program information, to make the program  
5 table for two-dimensionally displaying the programs with two axes of free attributes, for the audience, the program tables of various constructions can be displayed on the display means at will and in respective program retrieval operations, the program table easy to look for the program  
10 can be obtained. The effect that the objective program can be found in a short time by coming up with ideas for the extraction of the program or the like, and the effect of being useful for making the broadcast view plan of himself are obtained.

15 While the preferred embodiments of the present invention have been described in the above, various variations and modifications may be made without departing from the scope of the invention claimed hereinbelow.

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What is claimed is:

1. A system for processing program information comprising program information storage means for storing program information, and program table display means for a two-dimensional display according to a designation of two-axes attributes when two attributes from among program information attributes are used for two axes of a program table.
2. A system for processing program information as claimed in claim 1, further comprising attribute input means through which the two-axes attributes used for two-dimensionally displaying the program table are input, and program table making means for retrieving program information in program information stored in the program information storage means on the basis of said input attributes to make the program table, said program information display means displaying the program table from the program table making means.
3. A system for processing program information as claimed in Claim 2, wherein the program table making means has the functions of retrieving program information stored in the program information storage means and classifying said program information.

4. A system for processing program information as claimed in Claim 2, wherein another attribute is selected or add to the two-axes attributes of the program table to  
5 change over the display.
5. A system for processing program information as claimed in Claim 2, wherein the display is possible at the condition of culling a portion needless to be displayed  
10 when displaying the program table.
6. A system for processing program information as claimed in Claim 5, wherein the original program table can be restored when displaying the program table.  
15
7. A system for processing program information as claimed in Claim 2, wherein an attribute relative to the program can be selected to change over the display.
- 20 8. A system for processing program information as claimed in Claim 2, wherein a new attribute can be added to and an attribute can be deleted from the program table in accordance with a selection of the attribute by a user or an input from another system.

9. A system for processing program information as claimed in Claim 1, wherein information registered by a user can be designated as an attribute of the program table.

5 10. A system for processing program information as claimed in Claim 2, wherein, when there are plural programs in a same time zone, they can be used for a program check of the same time zone without expanding the display area by displaying them one upon another as they  
10 are shifted rearward little by little, and displaying them at the front one by one.

11. A system for processing program information as claimed in Claim 2, wherein three-axes attributes of the  
15 program table are selected by a user to display information as a three-dimensional shape.

12. A system for processing program information as claimed in Claim 2, wherein the attributive structure of a  
20 word relative to an attribute of the program table can be extracted from program information.

13. A system for processing program information as claimed in Claim 2, wherein an outline so far, pictures or  
25 sounds of a program can be stored to display and play back

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them.

14. A system for processing program information as  
claimed in Claim 2, wherein, when a channel or a program  
5 is selected as an attribute of the program table, it is  
possible that the channel is changed over to the picture  
of the program and program relation information is  
displayed if the program is on the air at present, and  
only information relative to the program is displayed if  
10 the program is off the air.

15. A system for processing program information as  
claimed in Claim 2, wherein, a channel is selected as an  
attribute of the program table, advertisements and program  
15 relation information can be displayed in accordance with  
the time schedule of programs in the channel.

16. A system for processing program information as  
claimed in Claim 2, wherein program information, program  
20 relation information, program information renewal  
information, information registered by a user, a program,  
a picture, or a sound can be transmitted and received.

17. A system for processing program information as  
25 claimed in Claim 2, wherein an image sequence made by a

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user can be transmitted and received to be displayed in a portion of the program table.

18. A system for processing program information as claimed in Claim 2, wherein it is possible that program information selected by a user is transmitted and the number of people viewing the same program is calculated to display the result in a portion of the program table as an audience rating or the number of audience.

19. A system for processing program information, wherein program information including an index for retrieving a program can be transmitted and received.

20. A system for processing program information as claimed in Claim 19, wherein a user attribute is maintained at the receiver side to retrieve program information including an index for retrieving a program, on the basis of the user attribute.

21. A system for processing program information as claimed in Claim 19, wherein, when a retrieval was unsuccessful with program information including an index for retrieving a program, at the receiver side, a retrieval and an automatic classification are carried out

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at the transmitter side and the result is transmitted to the receiver side.

22. A system for processing program information as  
5 claimed in Claim 20, wherein, when a retrieval as claimed  
in Claim the user attribute was unsuccessful with program  
information including an index for retrieving a program,  
at the receiver side, a retrieval and an automatic  
classification according to the user attribute are carried  
10 out at the transmitter side and the result is transmitted  
to the receiver side.

23. A system for processing program information as claimed in Claim 2, wherein a designated program can be recorded, reserved for recording or played back in accordance with a designation of a user or an input from another system.

24. A system for processing program information as  
20 claimed in Claim 2, wherein programs recorded or reserved  
for recording can be displayed along the time of the  
program table.

25. A system for processing program information as  
25 claimed in Claim 2, wherein a recorder is provided for

recording information of the program viewed by a user, and a relationship with recorded program information is examined in all programs and the program is displayed when it is judged that the relationship is high.

5

26. A system for processing program information as claimed in Claim 2, wherein it can be shown whether a performer of the program appears on a certain day or not.

10

27. A system for processing program information as claimed in Claim 2, wherein the system has fitting degree calculation means for calculating a fitting degree between program information and each piece of program classification information, and program classification

15

means in which, to one given piece of program classification information and a program information set, a fitting degree of each piece of program information in the program information set to program classification information, is calculated by using the fitting degree

20

calculation means to obtain a subset of the program information set having a fitting degree not less than a given threshold value, and a line of the program

25

classification predetermined or designated by a user is taken as one or more attributes of the program table to display it by the program table display means.

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28. A system for processing program information as  
claimed in Claim 2, wherein the system has fitting degree  
calculation means for calculating a fitting degree between  
5 program information and each piece of program  
classification information, and program classification  
means in which, as to one given piece of program  
classification information and a program information set,  
a fitting degree of each piece of program information in  
10 the program information set to program classification  
information, is calculated by using the fitting degree  
calculation means to obtain a subset of the program  
information set having a fitting degree not less than a  
given threshold value, and the program table display means  
15 displays only a program classified into a program  
classification predetermined or designated by a user so  
that it can be distinguished from another program in the  
program table without depending on the form of the program  
table.

20

29. A system for processing program information as  
claimed in Claim 2, further comprising program information  
designation means for designating a subset as to a program  
information set stored in the program information storage  
25 means, relative key word extraction means for extracting a

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characteristic word set characterizing the subset from the subset of program information designated by the program information designation means, and program information extraction means for extracting characteristic word information from the designated subset by using the relative key word extraction means and extracting program classification information for discriminating and classifying program information similar to program information in the subset.

10

30. A system for processing program information as claimed in Claim 27, wherein program classification information is transmitted from a user side terminal to a server side terminal, program information is classified by the program information classification means at the server side, and only program information classified into program classification information transmitted from the user side terminal is transmitted to the user side terminal.

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ABSTRACT OF THE DISCLOSURE

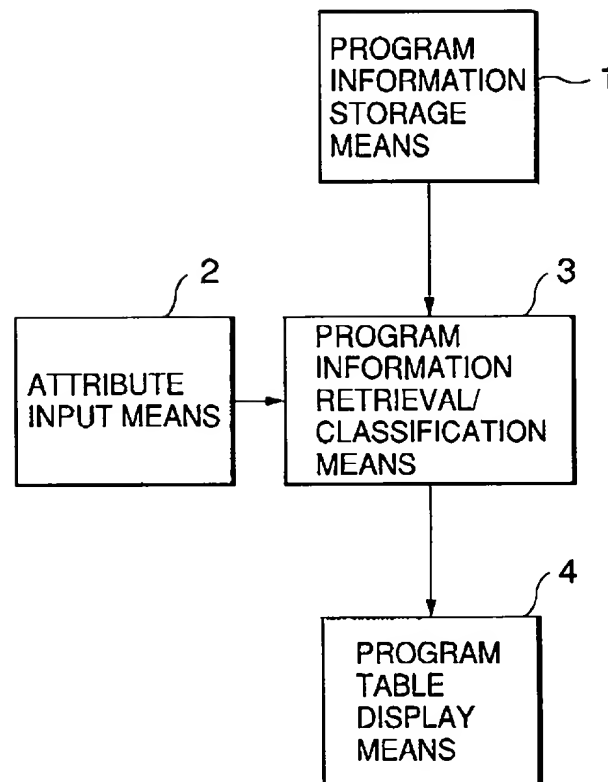
To provide a system for processing program information in which the display structure of a program table can freely be changed in accordance with a requirement or a taste of an audience, the system for processing program information is constructed to include program information storage means 1 for storing program information, and program table display means 4 for two-dimensionally displaying a program table following two axes in accordance with two attributes 102 and 103 among attributes given to each piece of program information, to make the program table 101 for two-dimensionally displaying programs with two axes of free attributes. For the audience, program tables of various constructions can be displayed on the display means at will and in respective program retrieval operations, the program table easy to look for a program can be obtained. An objective program can be found in a short time by coming up with ideas for the extraction of the program or the like, and this is useful for making a broadcast view plan of himself.

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FIG.1



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FIG.2

151		152	153	154	155	156	157	158
NIHON TV.	19970531	FRIDAY	17:00	18:00	TV OJAMANBOCHO	MANBOUTOTOKALU		0 OTHERS
NIHON TV.	19970531	FRIDAY	18:00	18:30	(N) PLUS 1/SATURDAY	NEWSCASTER: AKIO ISHIDA, KEI TAKAMI		0 OTHERS
NIHON TV.	19970531	FRIDAY	18:30	19:00	MOGUMOGU	LET'S MAKE A HOMEMADE PIZZA BY JOINING ALL FORCES		0 OTHERS
NIHON TV.	19970531	FRIDAY	19:00	20:54	<S> PRO BASEBALL	KOSHIEEN, HANSHIN-KYOJIN, COMMENTATOR: HIROSHI YAMAMOTO		2 SPORTS
NIHON TV.	19970531	FRIDAY	20:54	21:00	(N) (WEATHER)			0 OTHERS
NIHON TV.	19970531	FRIDAY	21:00	21:54	<S> FIVE	OF ASAMI BEGINNING TO INVESTIGATE A NEW TARGET		3 DRAMA

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FIG.3A

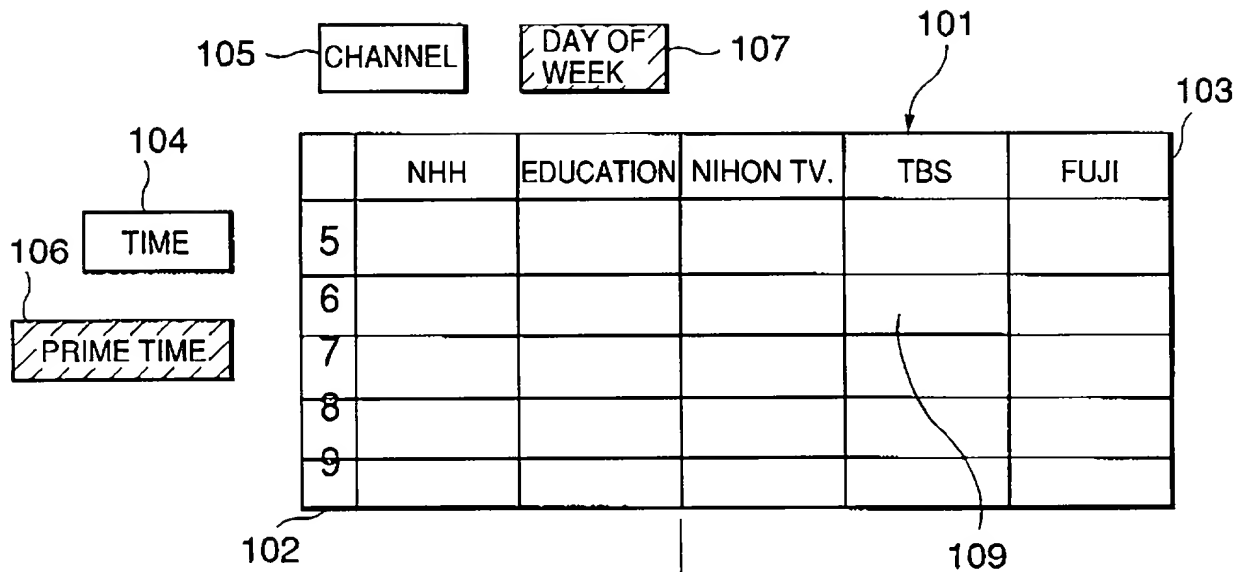


FIG.3B

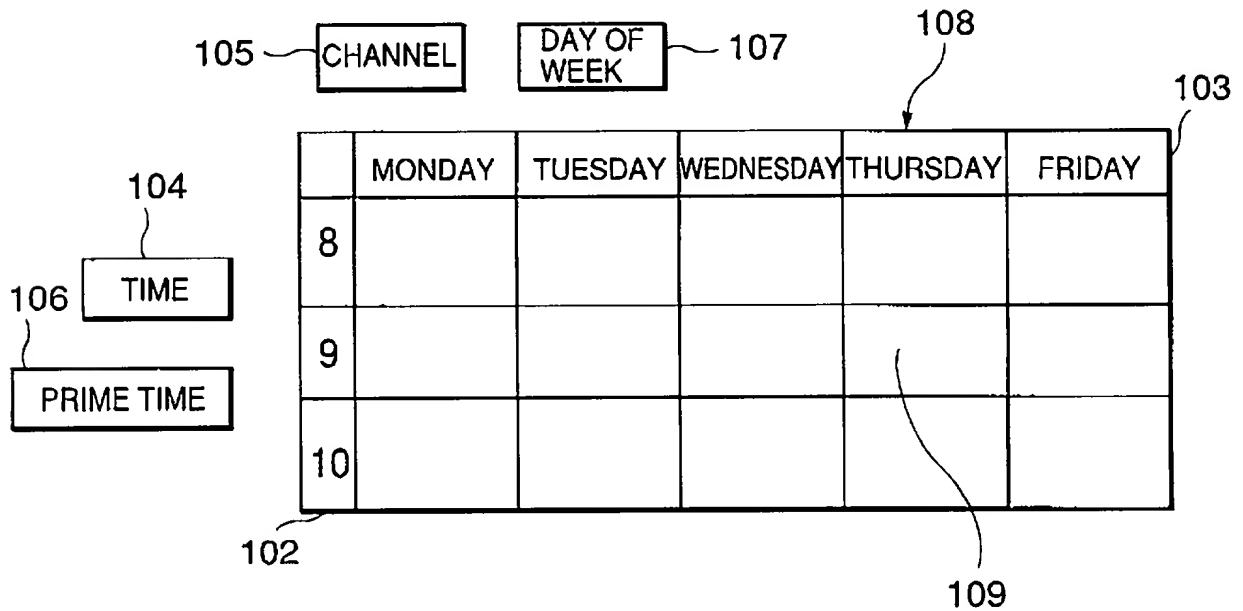


FIG.4A

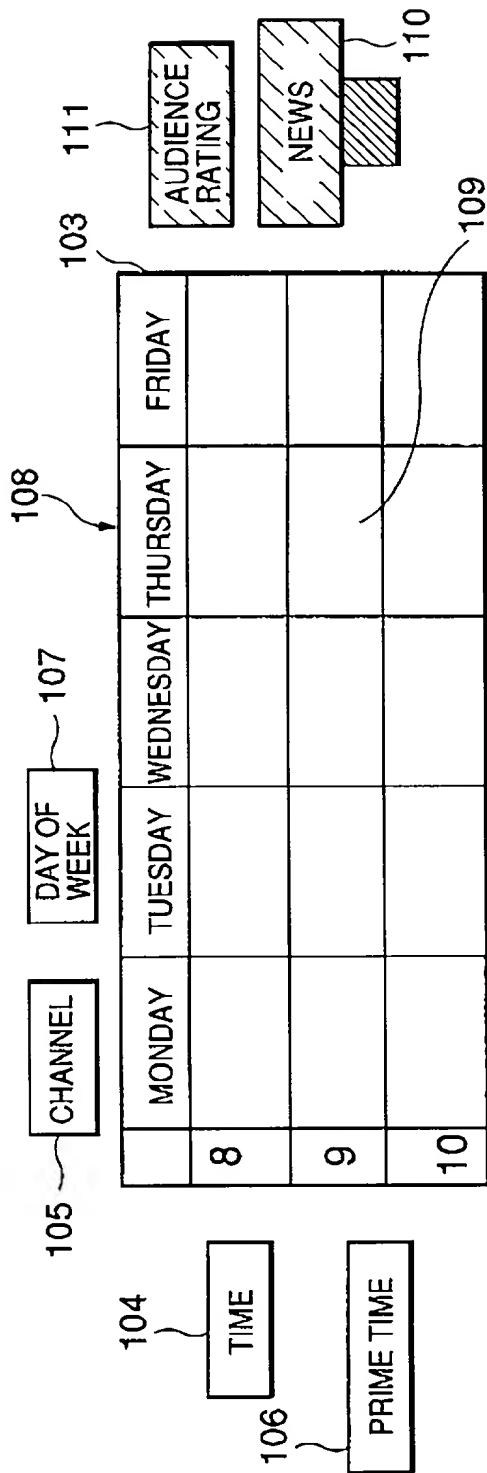
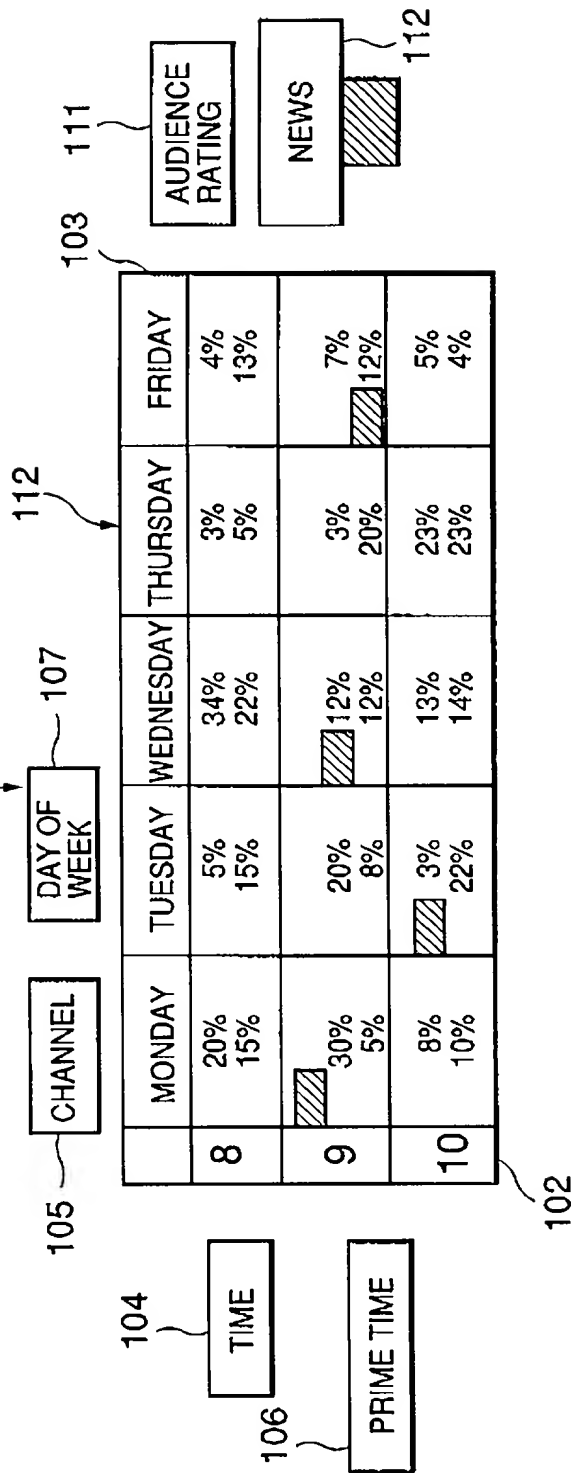


FIG.4B



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FIG.5A

TIME	CHANNEL						TYPE
	NHK	NHK EDUCATION	NIHON TV.	TBS	FUJI TV.	TV. ASAHI	
18:00					SAZAE SAN		
19:00				BASEBALL KYO-HAN	UNDER ONE ROOF		
20:00	MOURI		GIFT	NEWS 23	SOCCER		
21:00							
22:00						NEWS TODAY	

FIG.5B

TIME	TYPE							CHANNEL
	MOVIE	DRAMA	MUSIC	SPORTS	NEWS	WEATHER	NON-SECTION	
18:00			⑧LIVE CONCERT	⑥GRAND SUMO TOURNAMENT	⑩NEWS 6	①WEATHER		
19:00								
20:00		①AGURI (REPEAT)		⑧BASEBALL		④WEATHER		
21:00	⑩FOREIGN FILM				⑫NEWS 9			
22:00						④WEATHER		

FIG.5C

	TYPE							AUDIENCE RATING
	MOVIE	DRAMA	MUSIC	SPORTS	NEWS	WEATHER	NON-SECTION	
OVER 30%		8:00①AGURI						
20%		20:00⑧UNDER ONE ROOF		20:00⑧BASEBALL KYO-HAN				
15%		21:00⑫GIFT		21:00⑭SOCCER	23:00⑥NEWS 23			
10%		20:00⑫X-FILE			22:00⑩NEWS STATION			
5%								

FIG.6A

TYPE PERFORMER



	MOVIE	DRAMA	MUSIC	SPORTS	NEWS	WEATHER	NON-SECTION
NAMIE AMURO			20:00 ⑧ HEYHEYHEY	14:00 ④PRO BASEBALL : OPENING CEREMONY			
NORIKO KATO		22:00 ④ SHOES OF GLASS					12:00 ⑧WARATTE IITOMO! 19:55 ④MAGICAL ZUNO POWER
RANRAN SUZUKI		19:00 ⑩GHOST STORY					
SMAP		22:00 ⑧DOKU, 22:00 ⑧HE					

FIG.6B

RELATIVE INFORMATION PERFORMER

	CD	BOOK	HOME PAGE
NAMIE AMURO	How to be a girl a walk in the park	AMURO NAMIE PHOTOGRAPH COLLECTION	
NORIKO KATO			<a href="http://kato">http://kato</a>
RANRAN SUZUKI			<a href="http://fuji">http://fuji</a>
SMAP	SE	SMAP PHOTOGRAPH COLLECTION	

[illegible]

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FIG.8

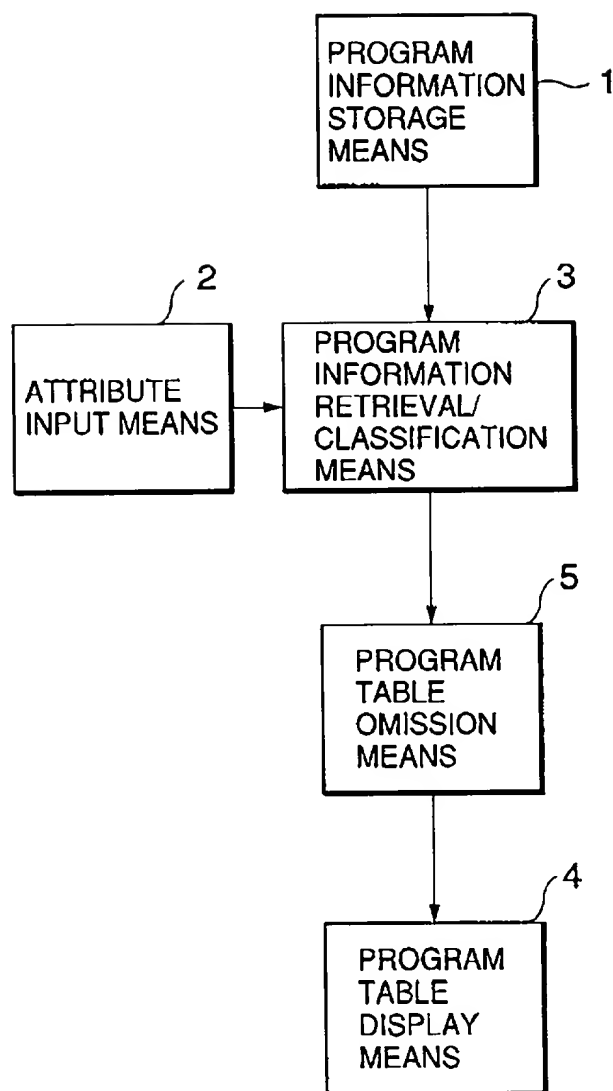


FIG.9A

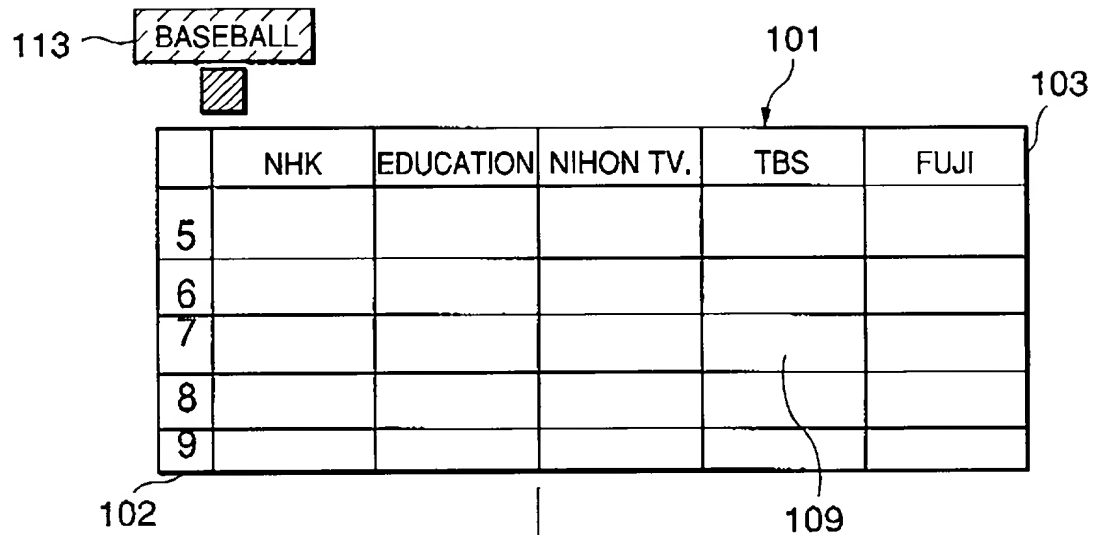


FIG.9B

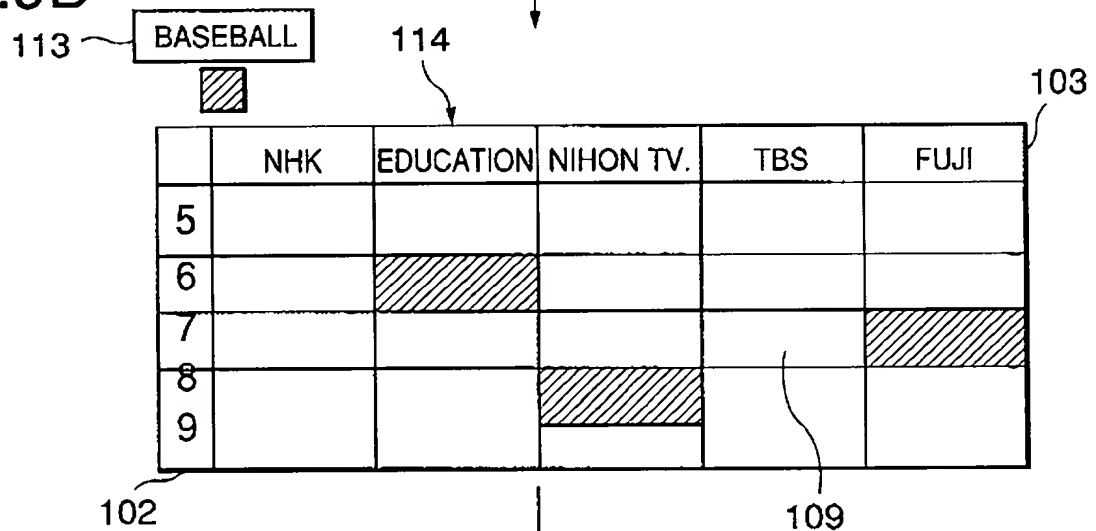
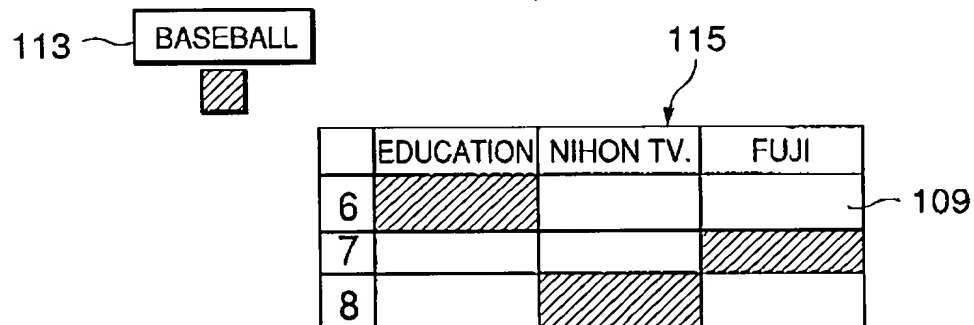


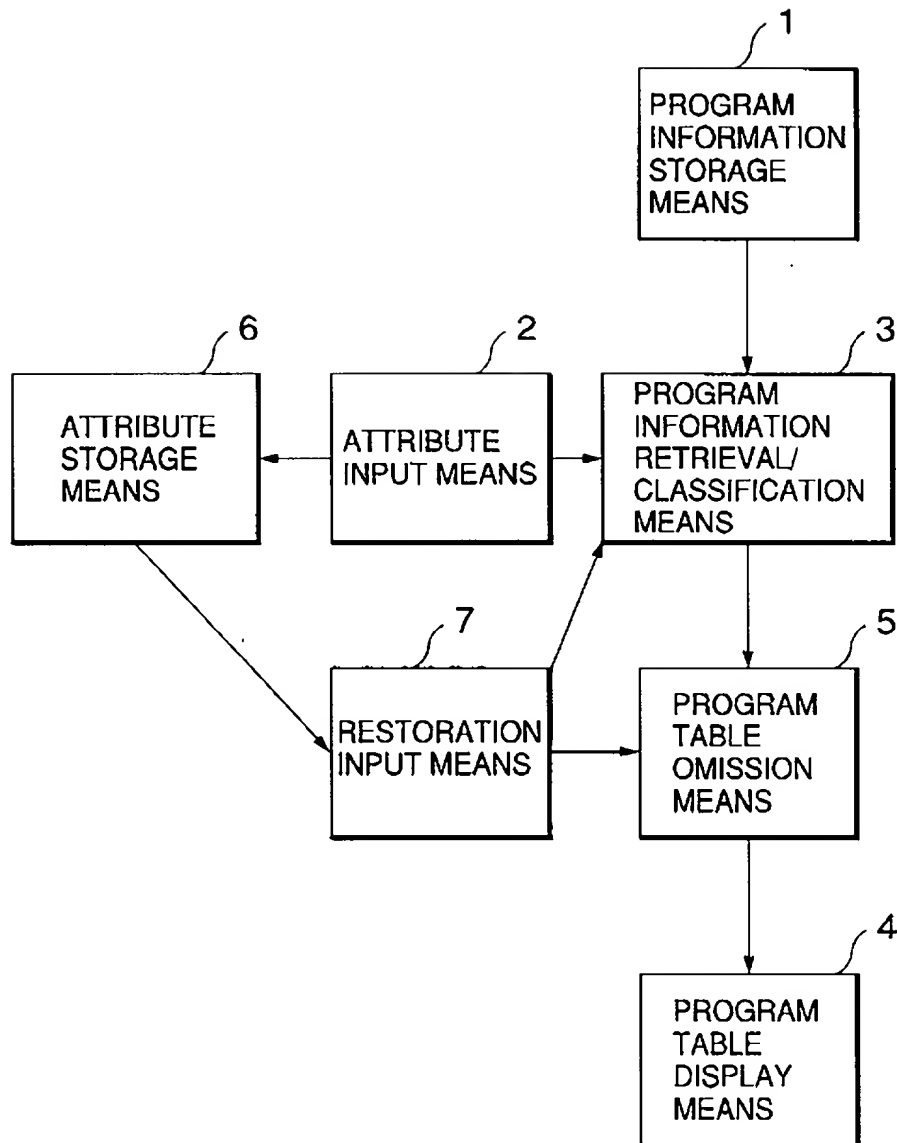
FIG.9C





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FIG.10



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FIG.11A

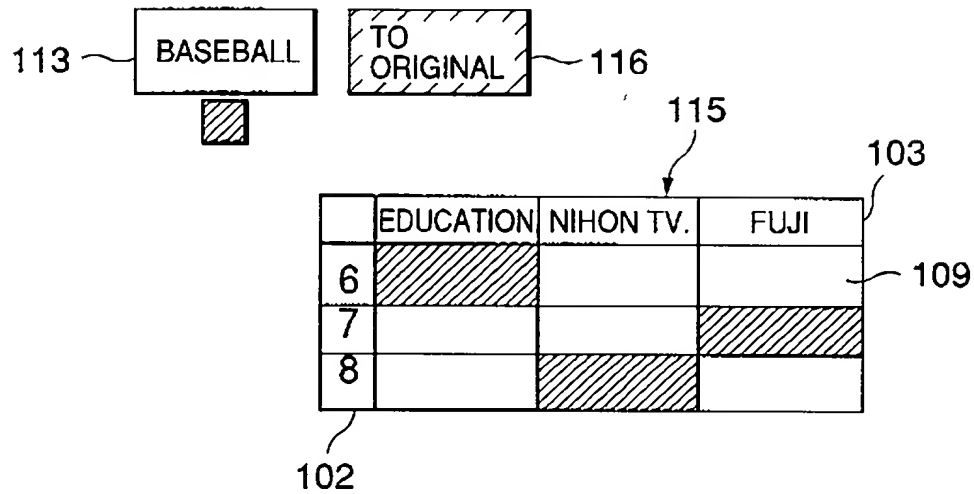
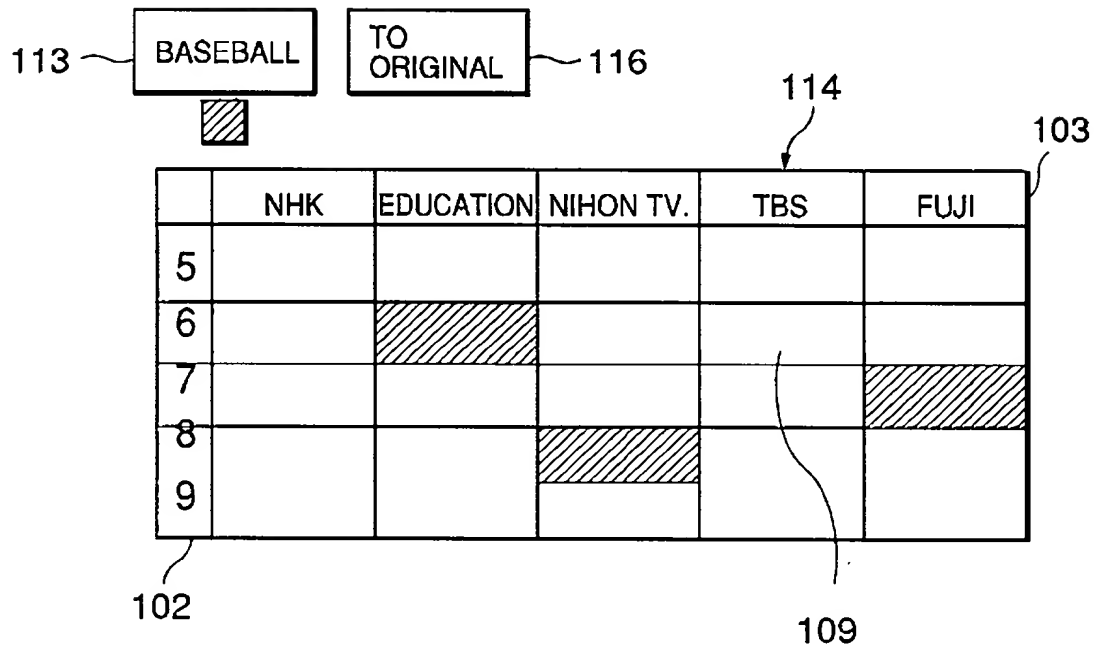
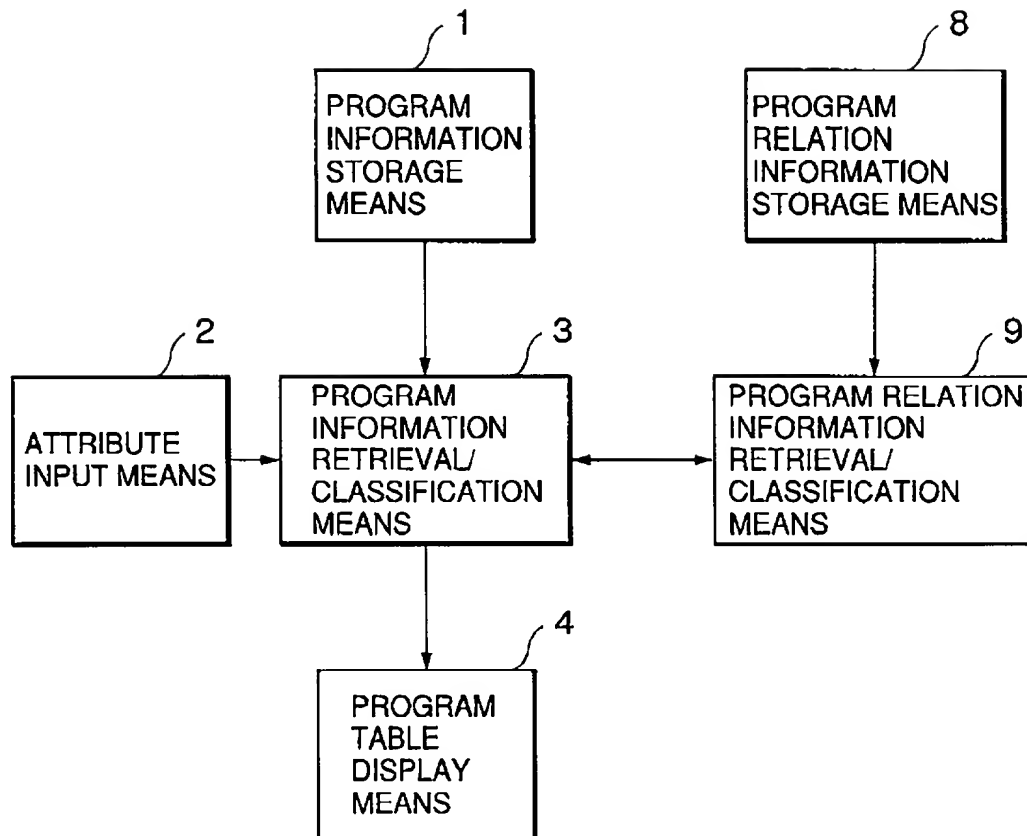


FIG.11B



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FIG.12



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FIG.13A

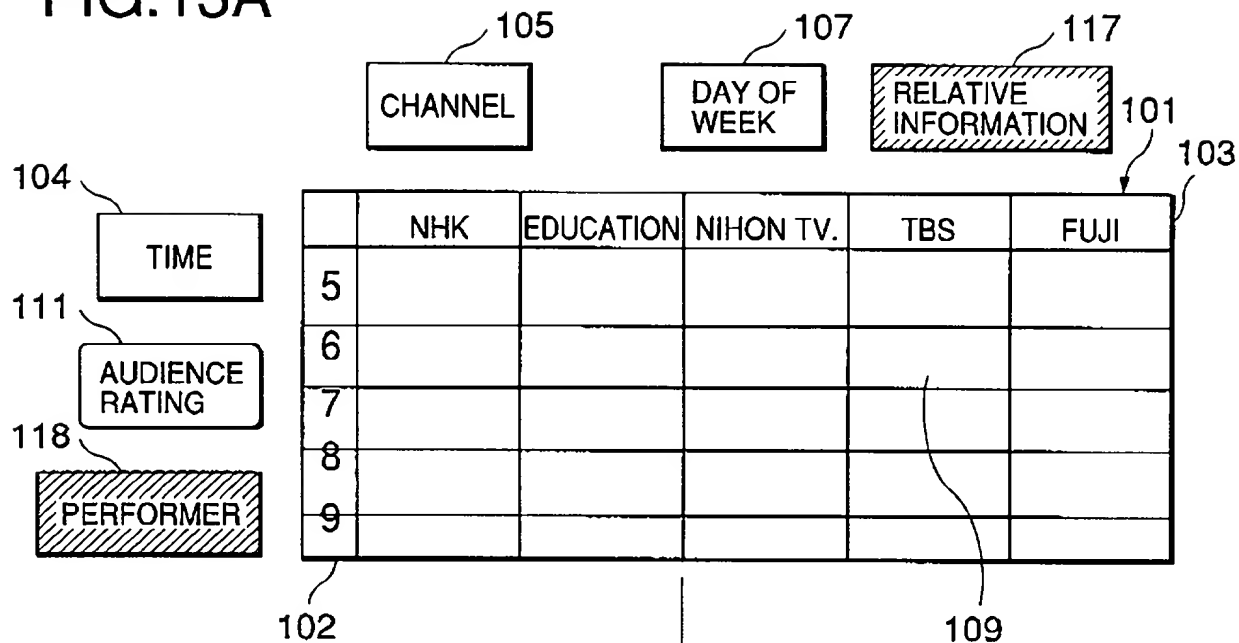
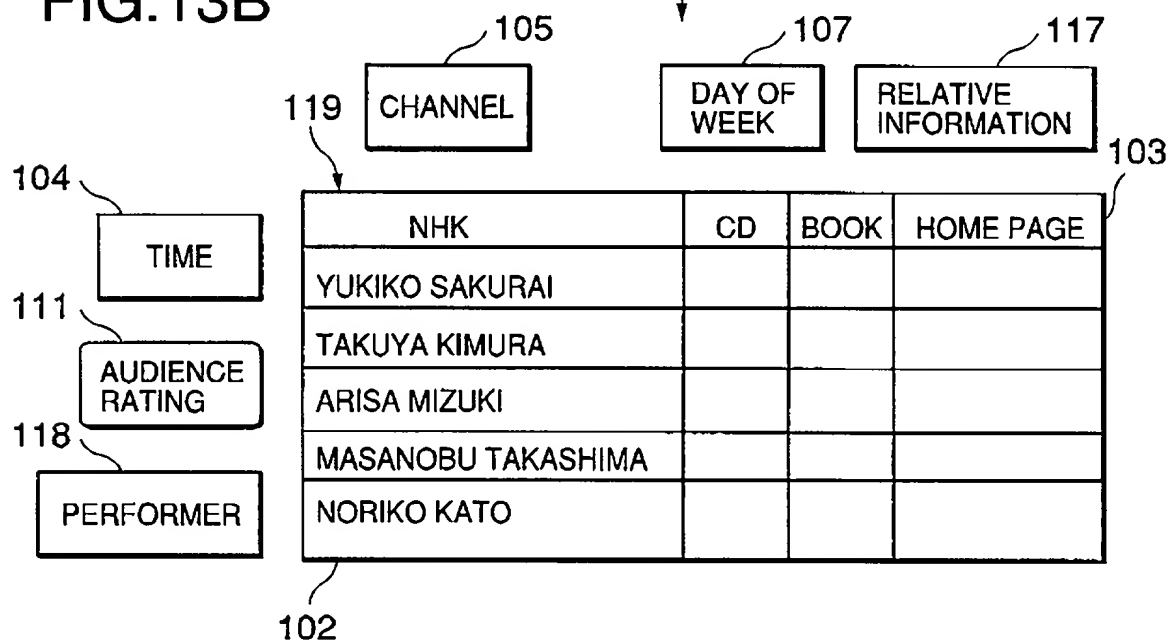
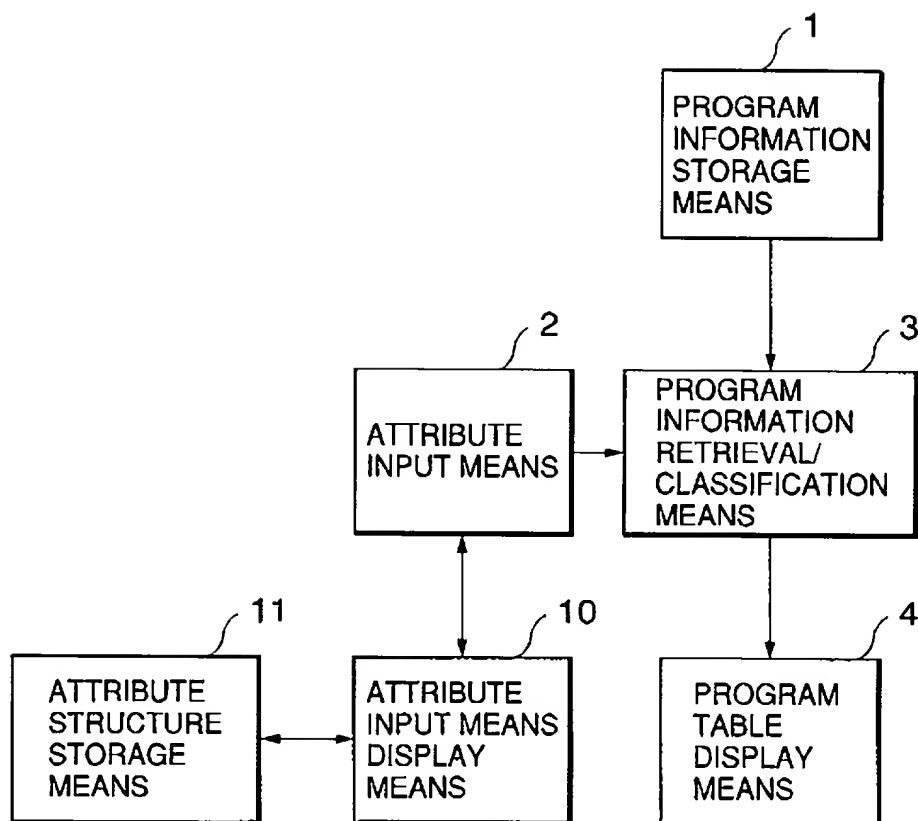


FIG.13B



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FIG.14



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FIG.15A

Diagram illustrating a table structure (101) with columns for TV stations (NHK, EDUCATION, NIHON TV., TBS, FUJI) and rows for time slots (5, 6, 7, 8, 9). A block labeled 'BASEBALL' (113) is positioned above the table. The table is labeled 109 on the right side.

	NHK	EDUCATION	NIHON TV.	TBS	FUJI
5					
6					
7					
8					
9					

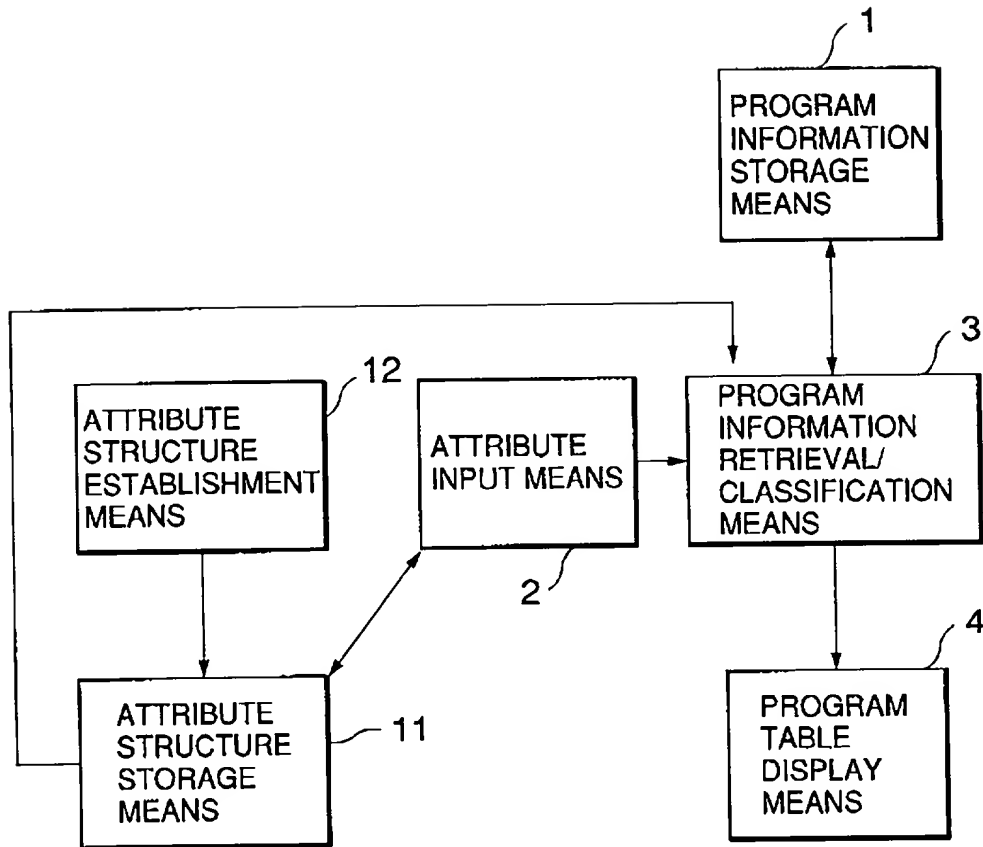
FIG.15B

Diagram illustrating a table structure (101) with columns for TV stations (NHK, EDUCATION, NIHON TV., TBS, FUJI) and rows for time slots (5, 6, 7, 8, 9). Three blocks are positioned above the table: 'HIGH-SCHOOL BASEBALL' (113a), 'PRO BASEBALL' (113b), and 'MAJOR LEAGUE' (113c). The table is labeled 102 on the left and 109 on the right. The table is also labeled 103 on the right side.

	NHK	EDUCATION	NIHON TV.	TBS	FUJI
5					
6					
7					
8					
9					

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FIG.16



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FIG.17A

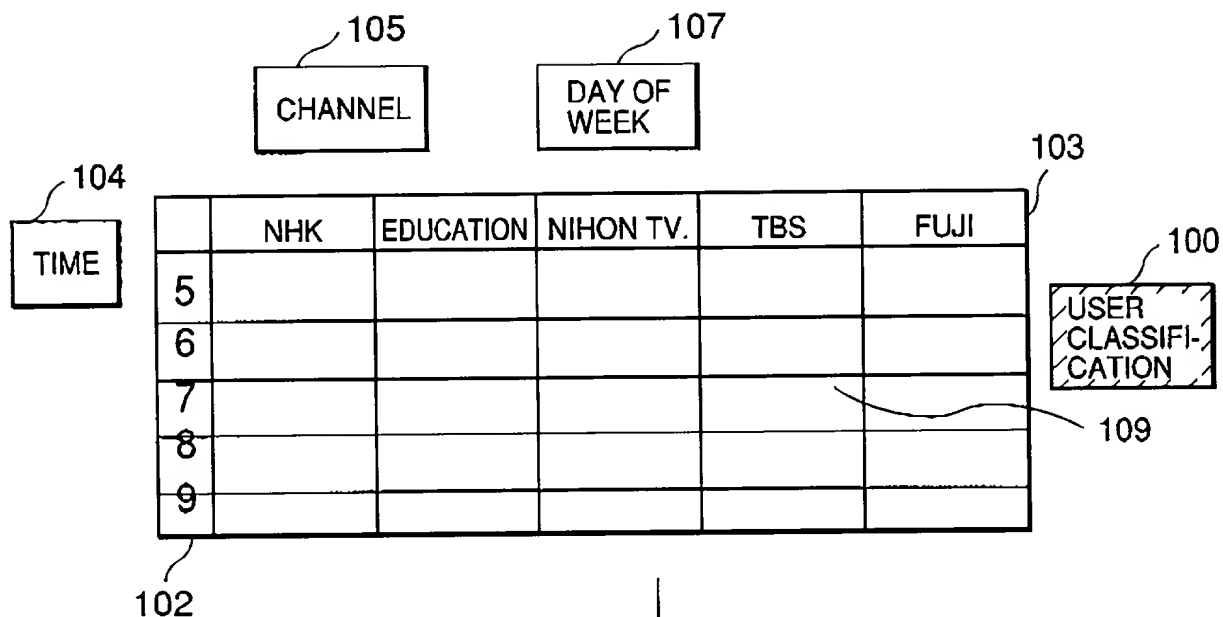


FIG.17B

USER CLASSIFICATION

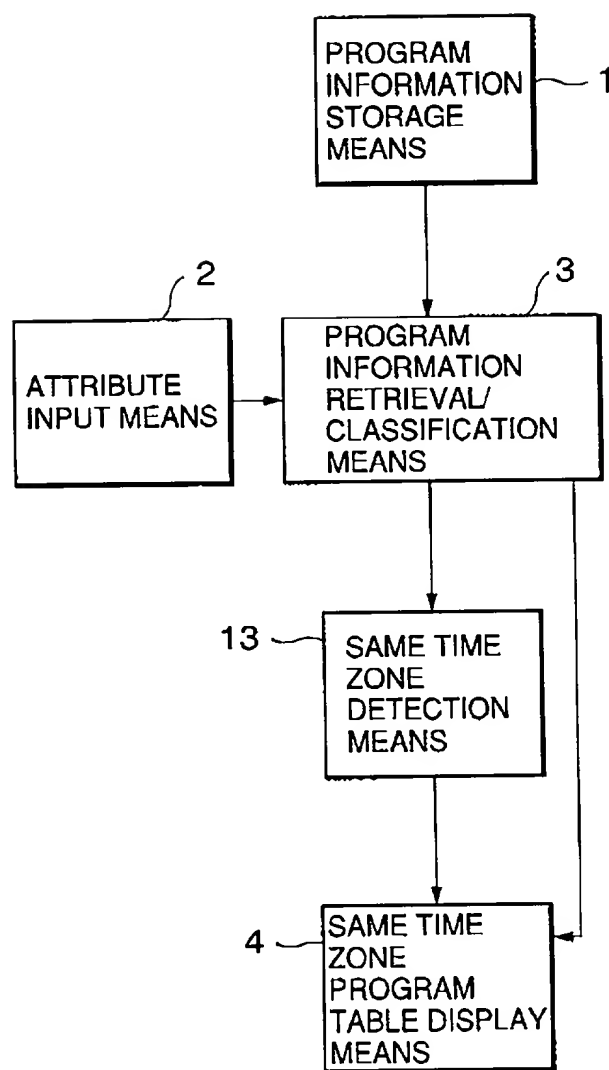
REGISTER SUCH AS COMPUTER:  
SOFTWARE  
CG  
PERSONAL COMPUTER  
MACHINE  
CPU  
HARD DISK

	1	2	3	4
COMPUTER	NHK; NATION STANDING ON ELECTRONICS	NHK EDUCATION; PERSONAL COMPUTER SCHOOL	THE UNIVERSITY OF THE AIR; PERSONAL COMPUTER ANALYSIS	
DIVING	TV. ASAHI; AMAMI OSHIMA	NIHON TV.; SOUTHERN COUNTRY PARADISE		
MY TASTE	NHK EDUCATION; SCIENCE EYE	TBS; THE WORLD OF VOD		
CHILD	NHK EDUCATION; TOGETHER WITH MAMMA	FUJI TV.; PONKIKKIES	TV. TOKYO; DORAEMON	



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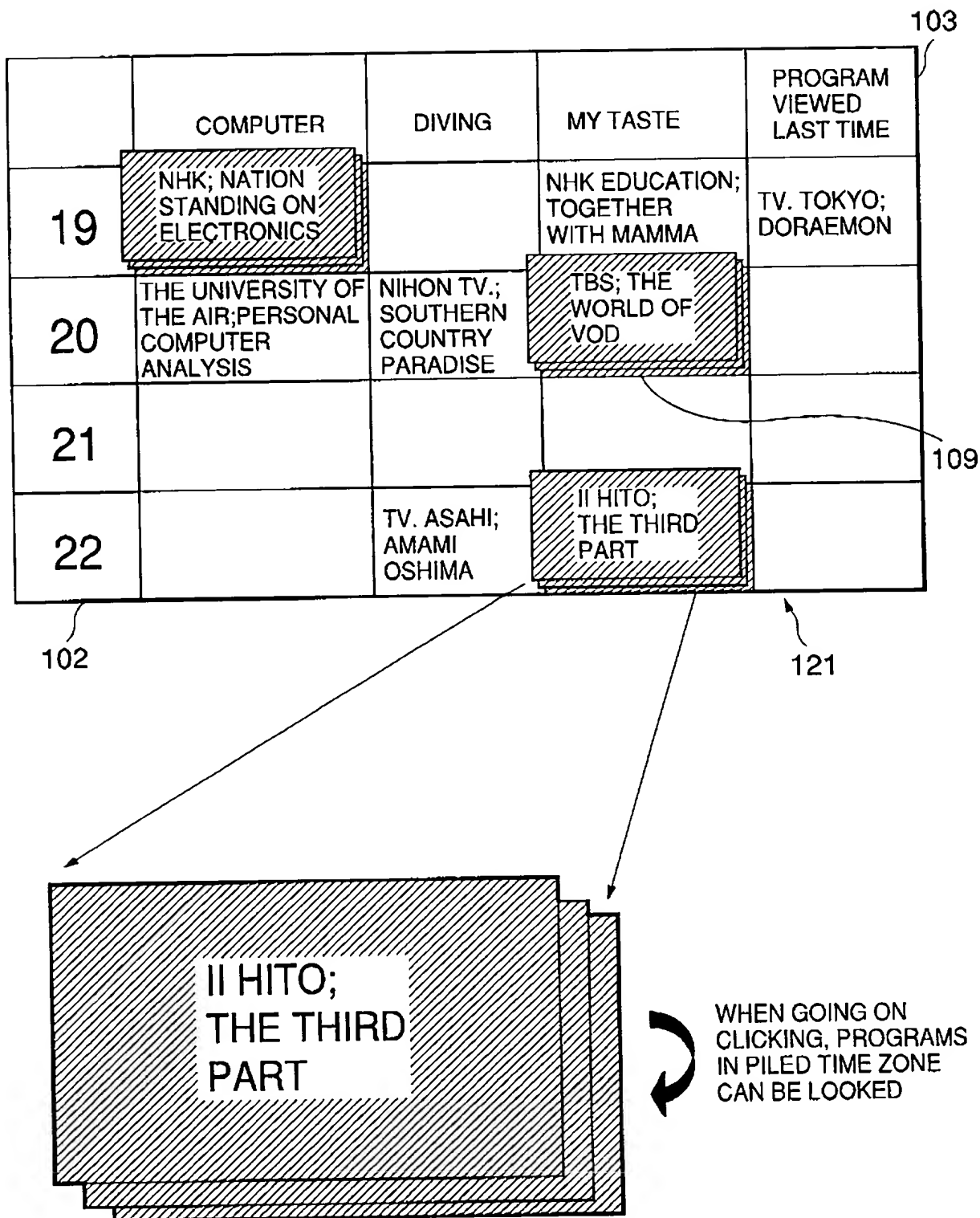
FIG.18



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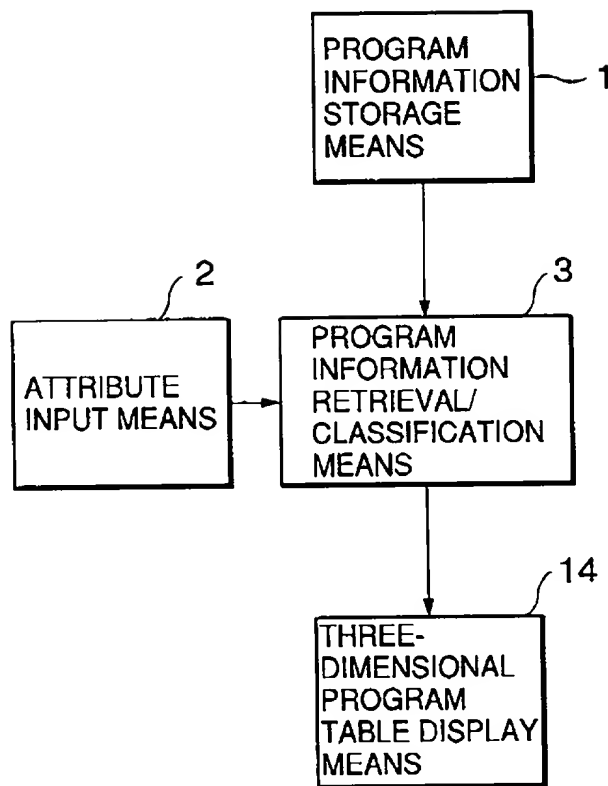
FIG.19



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FIG.20



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FIG.21A

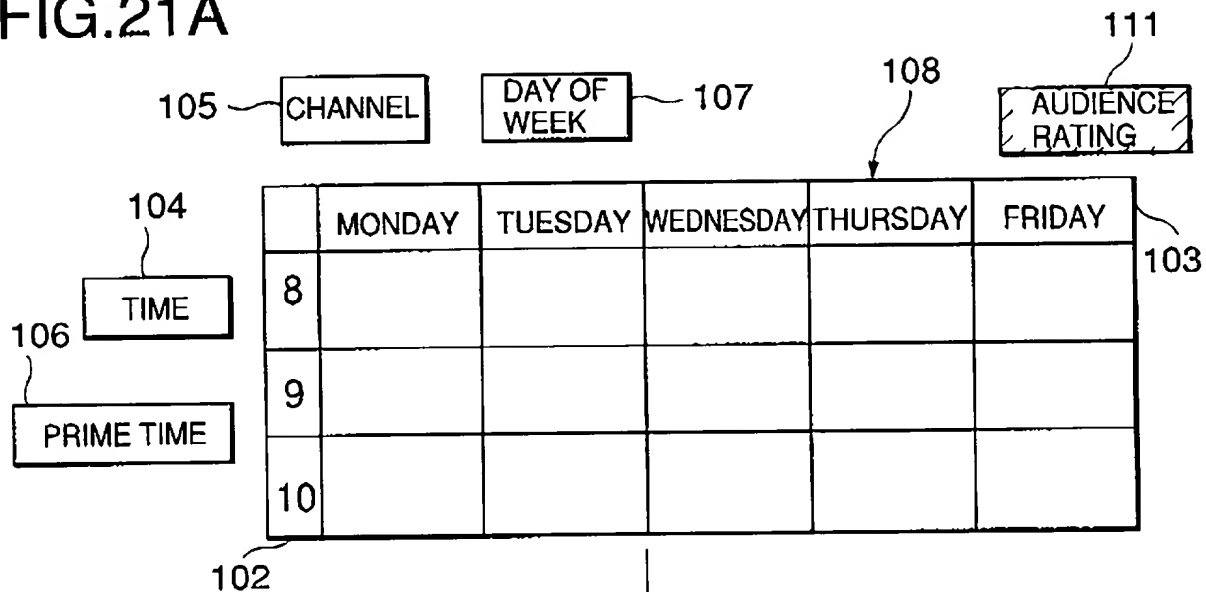
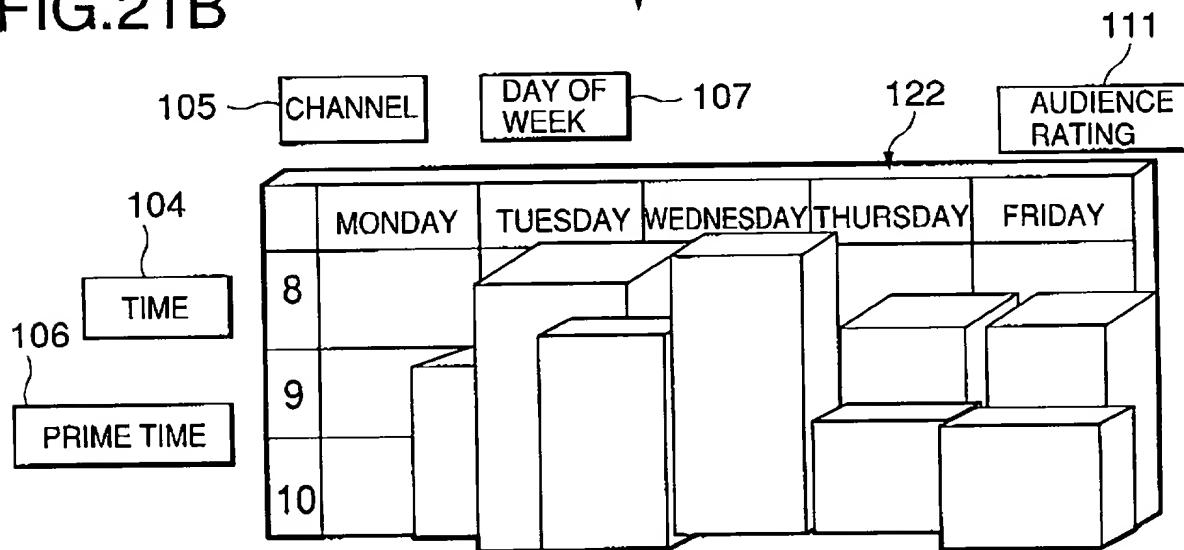
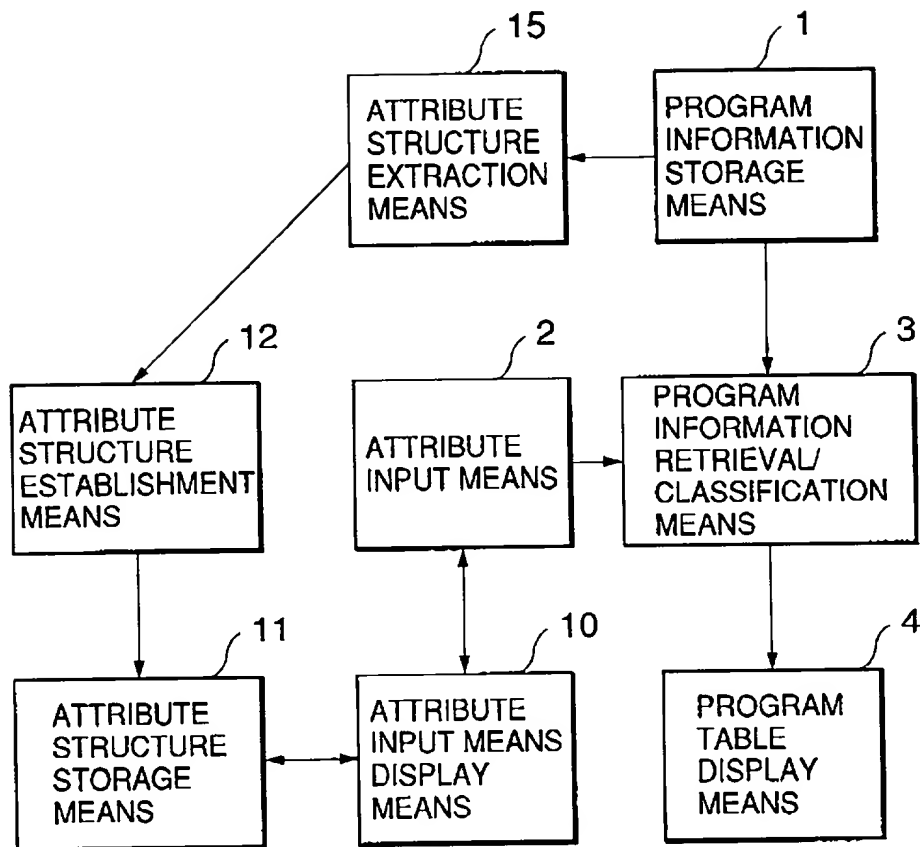


FIG.21B



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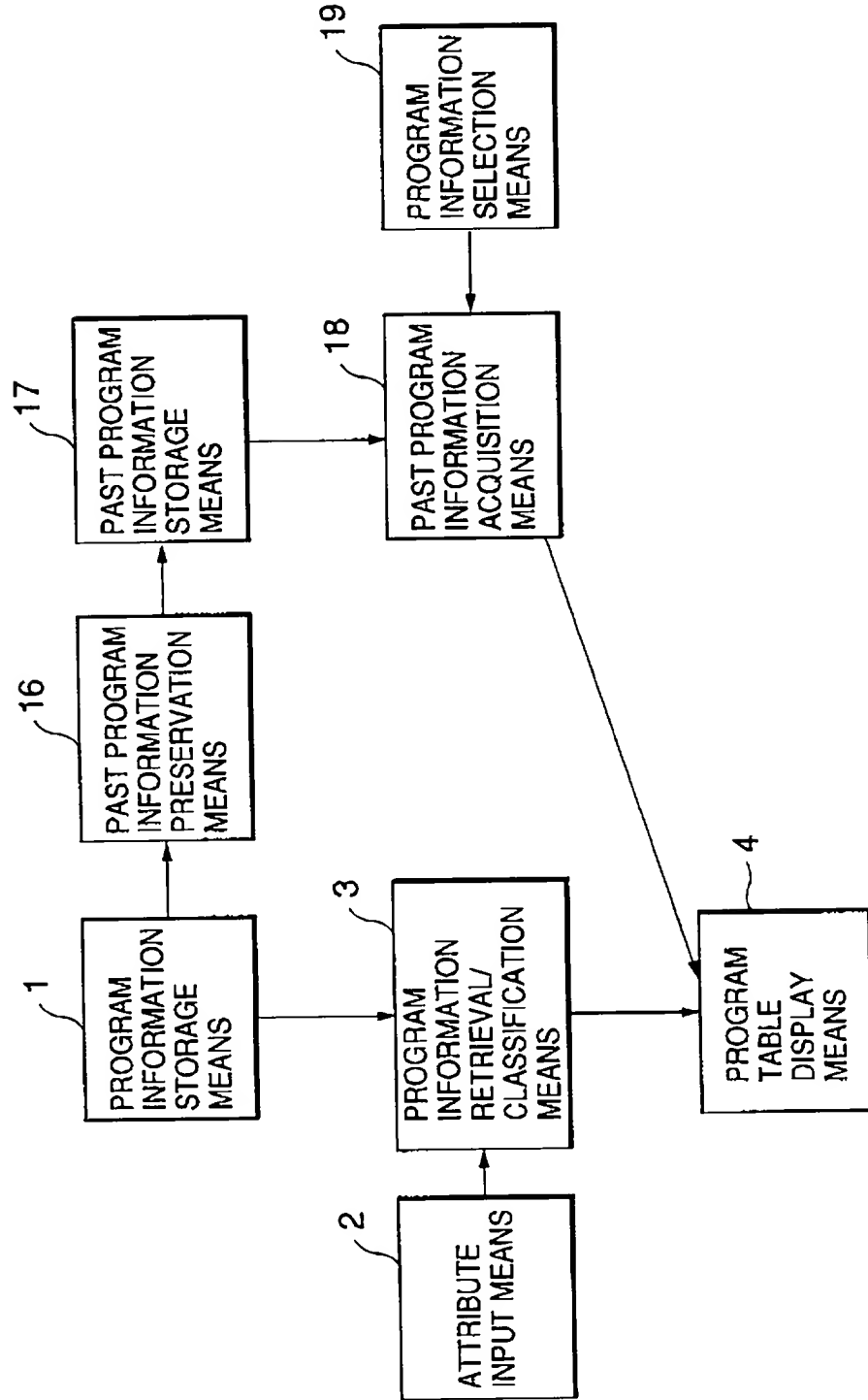
FIG.22



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FIG.23



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FIG.24A

TIME	CHANNEL	NHK	EDUCATION	NIHON TV.	TBS	FUJI
5						
6						
7						
8						
9						

FIG.24B

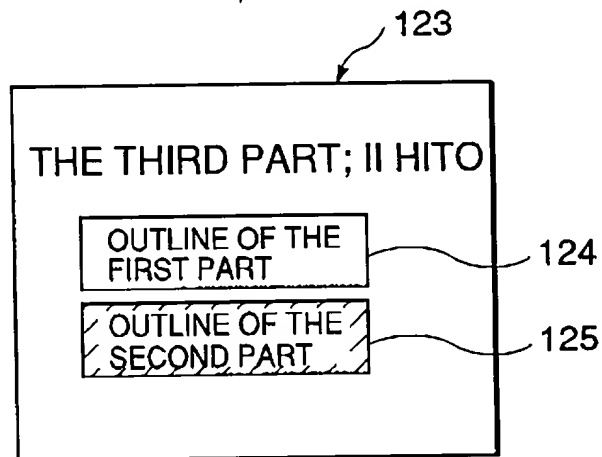
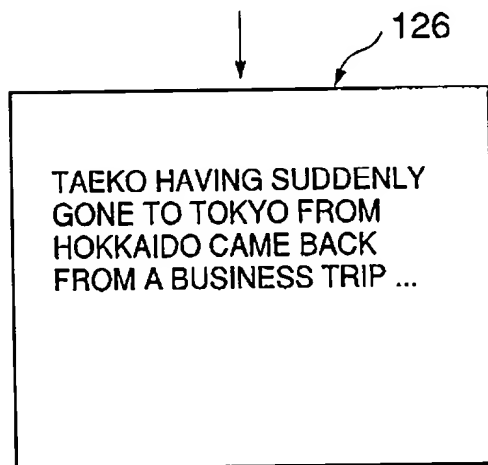
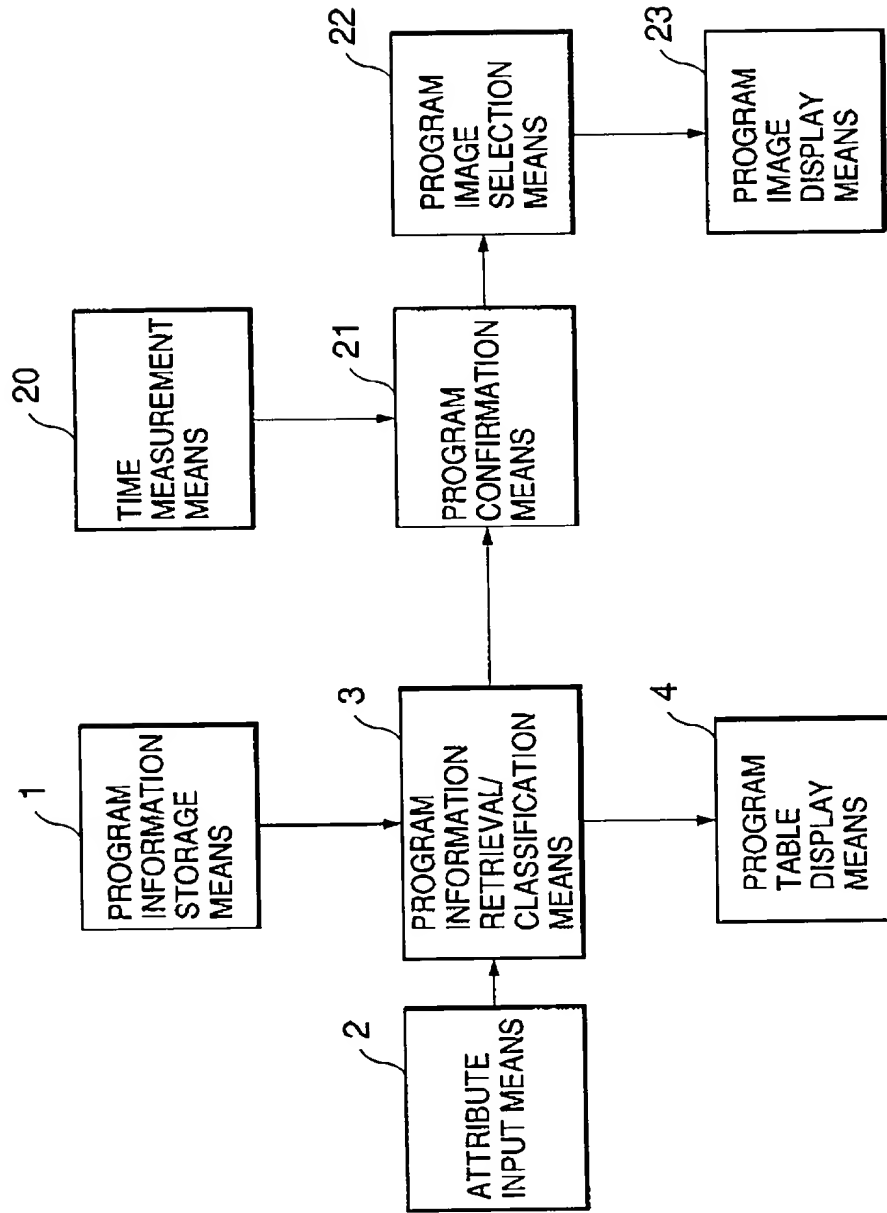


FIG.24C



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FIG.25





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FIG. 26A

104 TIME  NOW!>	105 CHANNEL					101 103 109
		NHK	EDUCATION	NIHON TV.	TBS	FUJI
	5					
	6					
	7					
	8					
	9					
102						

FIG. 26C

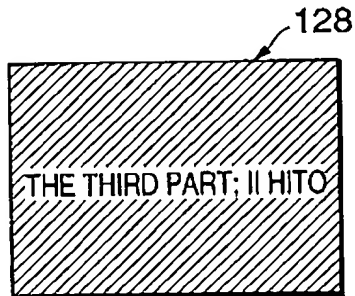
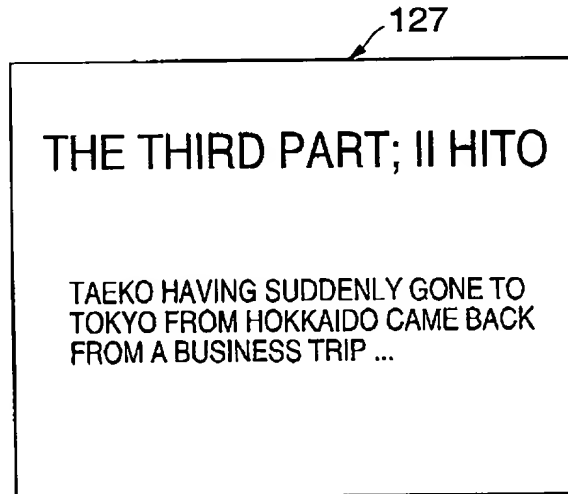


IMAGE ON ANOTHER PICTURE

FIG. 26B



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FIG. 27

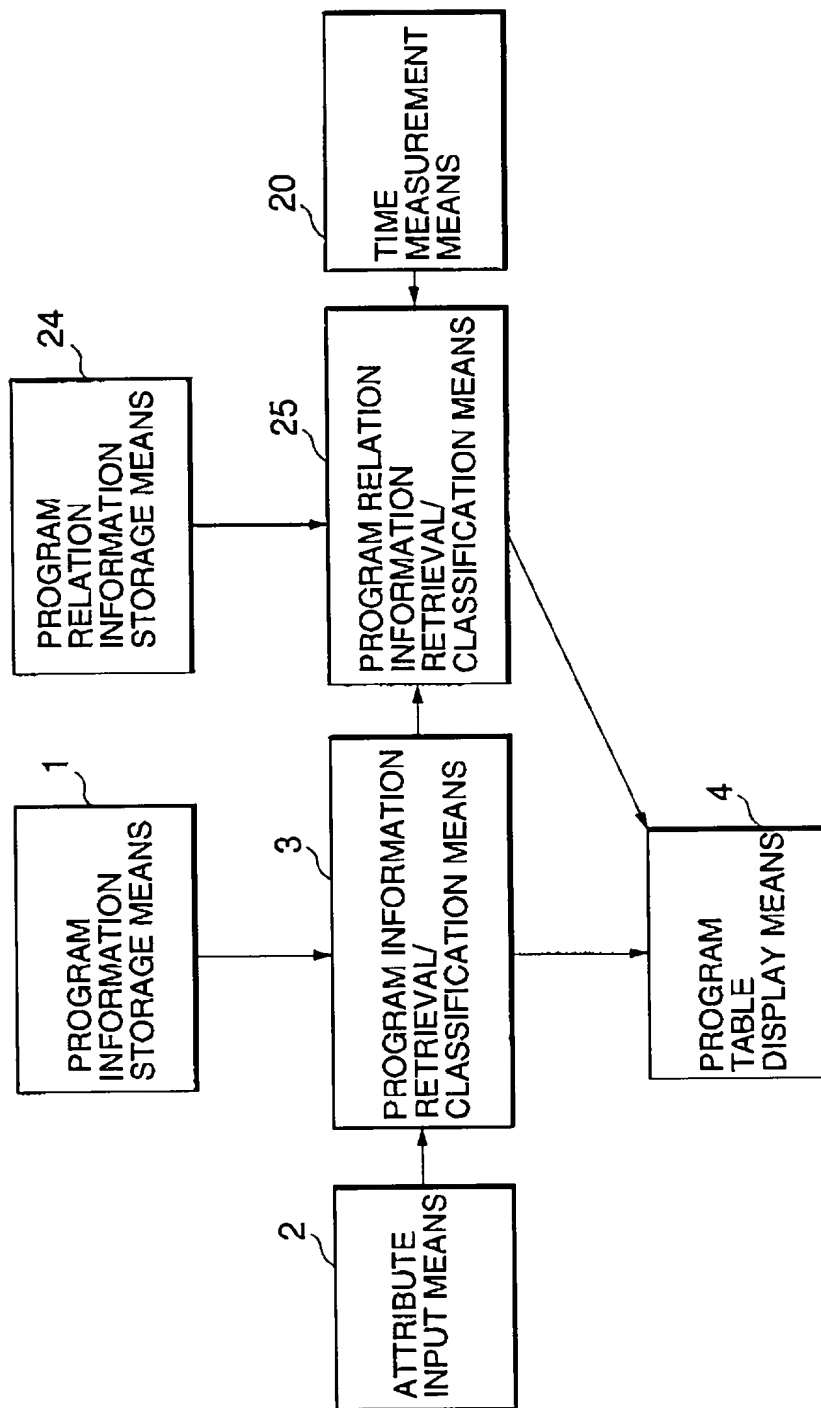


FIG. 28B

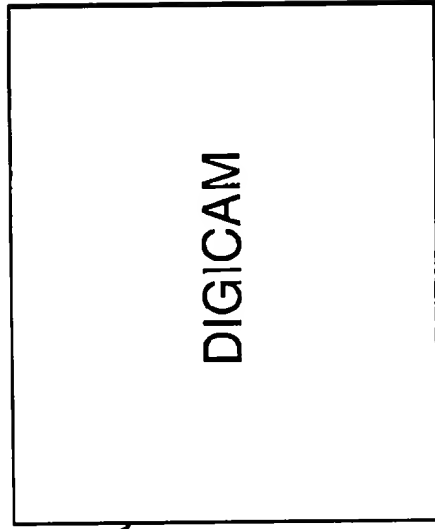


FIG. 28C

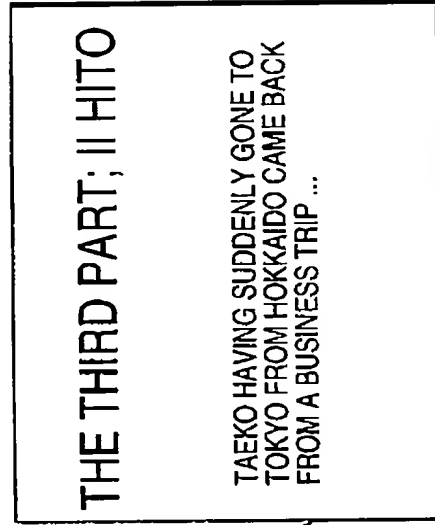


FIG. 28A

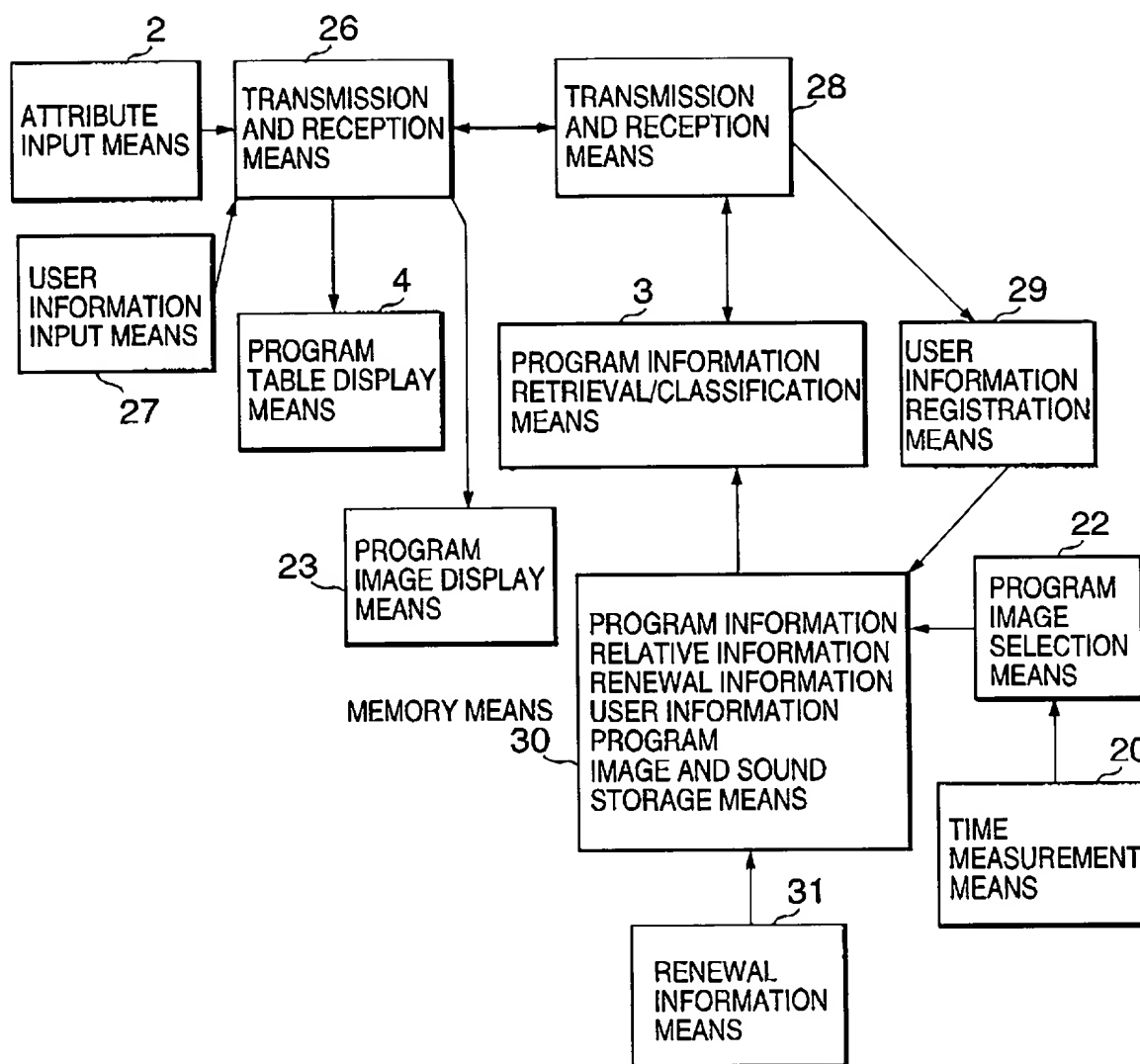
CHANNEL		101				
105		NHK	EDUCATION	NIHON TV	TBS	FUJI
104	TIME	5				
	NOW!>	6				
	NOW!>	7				
		8				
		9				
		109				
		102				

129

130

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FIG. 29



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FIG. 30A

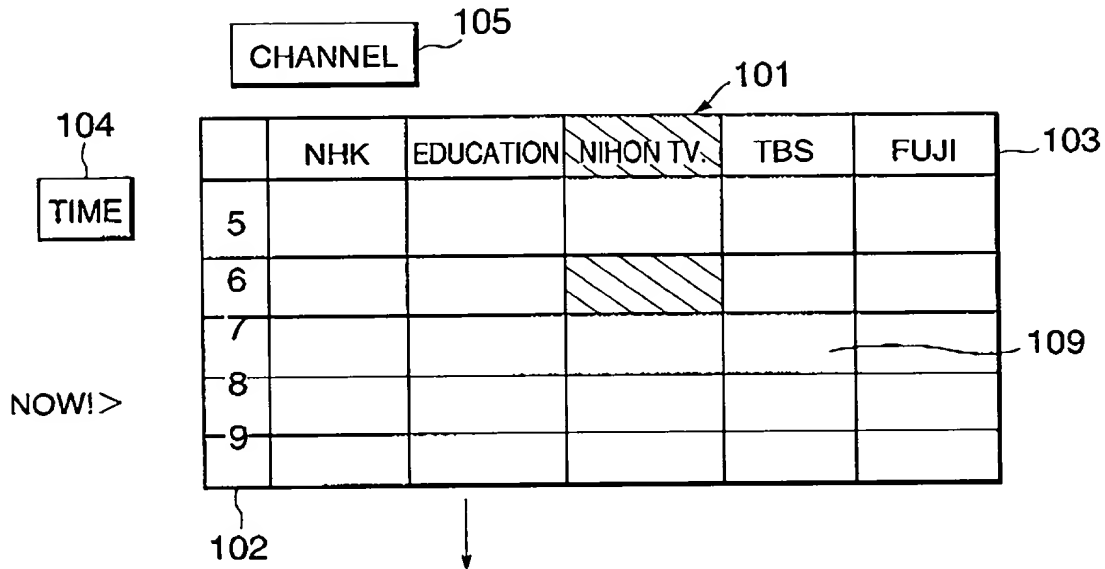
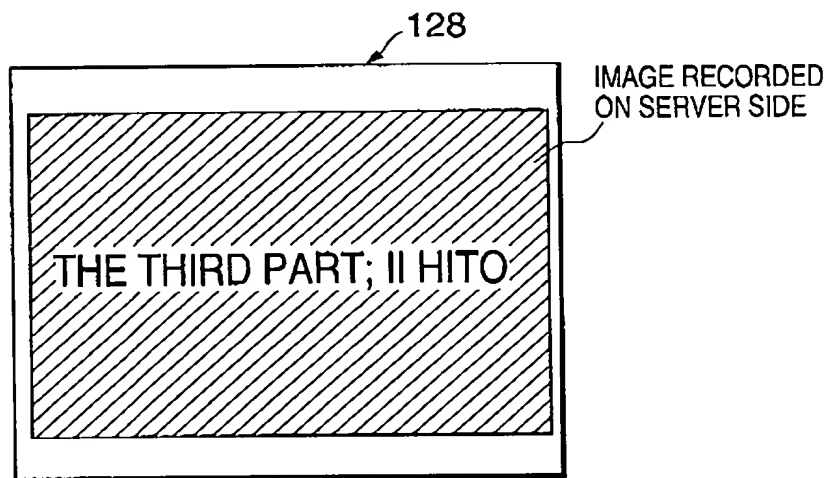
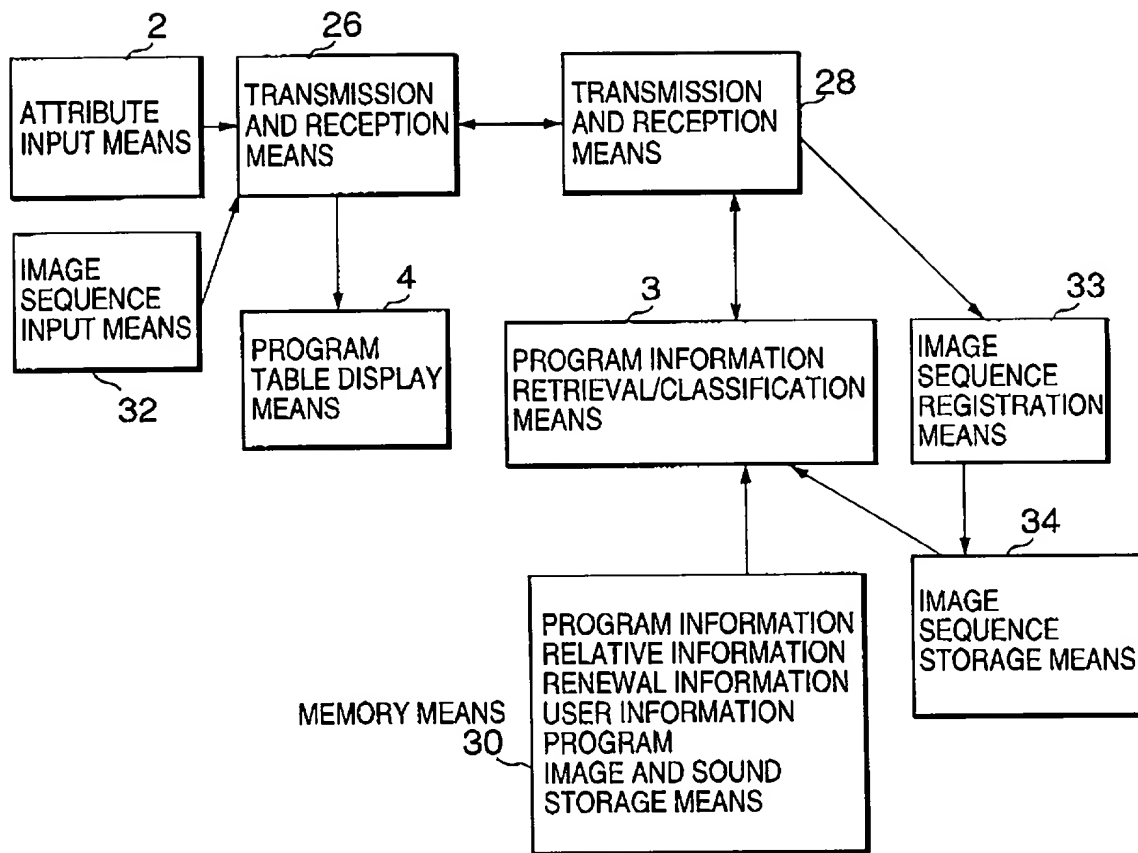


FIG. 30B



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FIG. 31



98- 7- 1;11:50 ; (株) 国興特許研究

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FIG. 32A

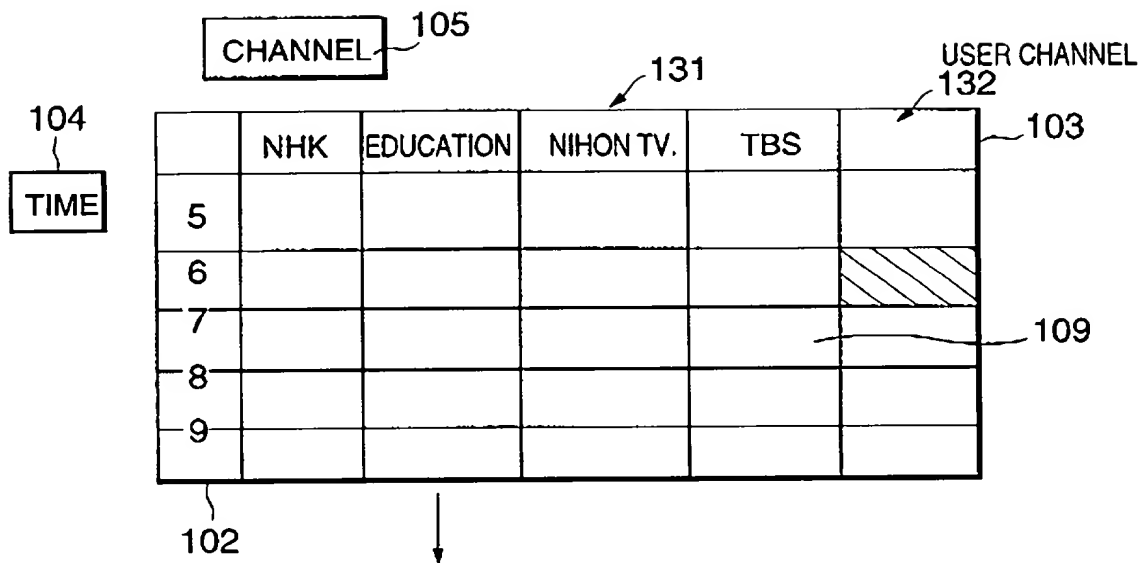
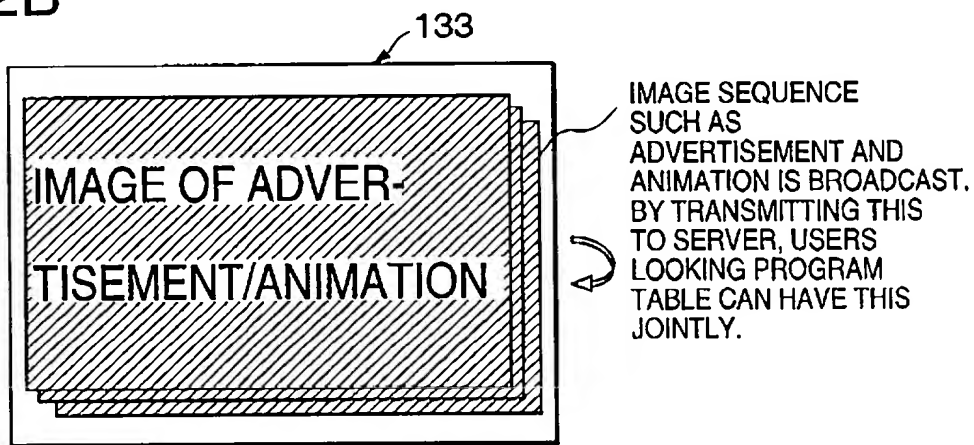
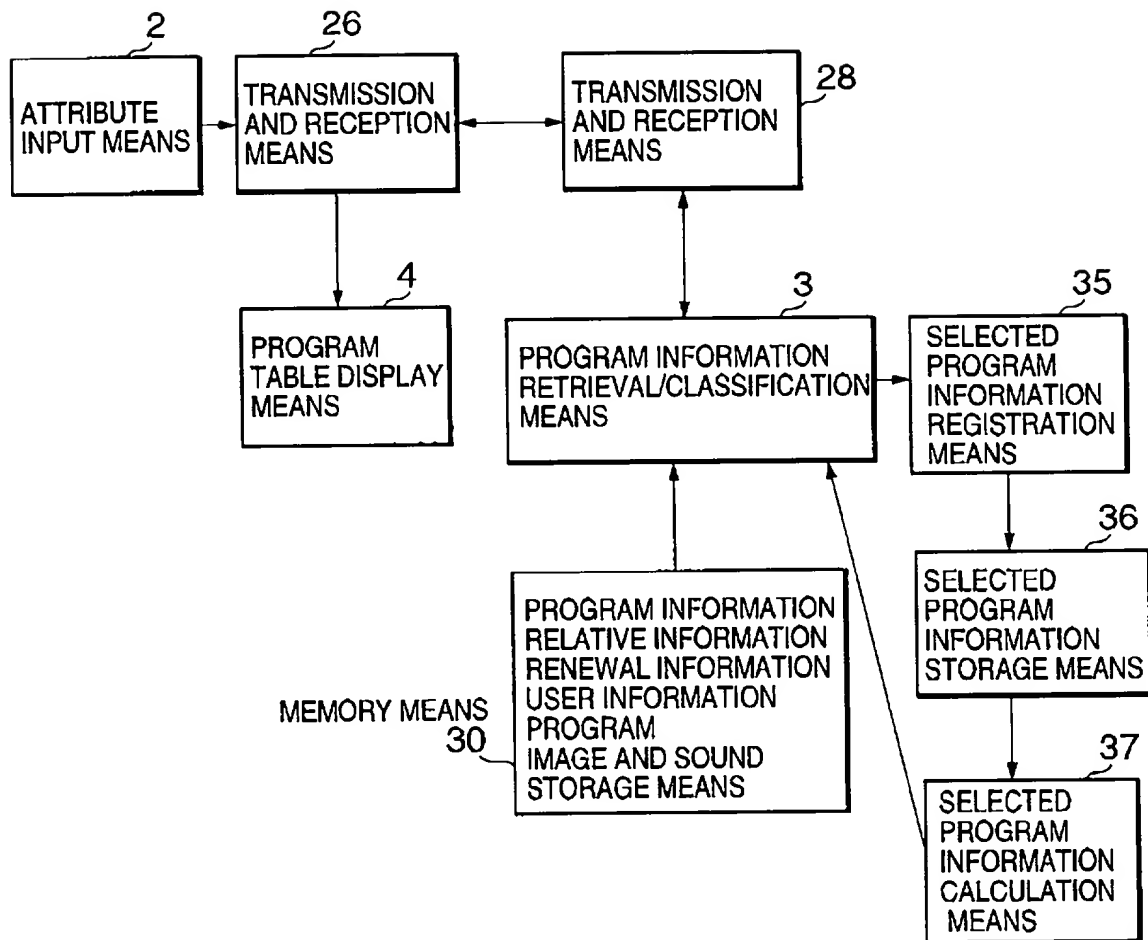


FIG. 32B



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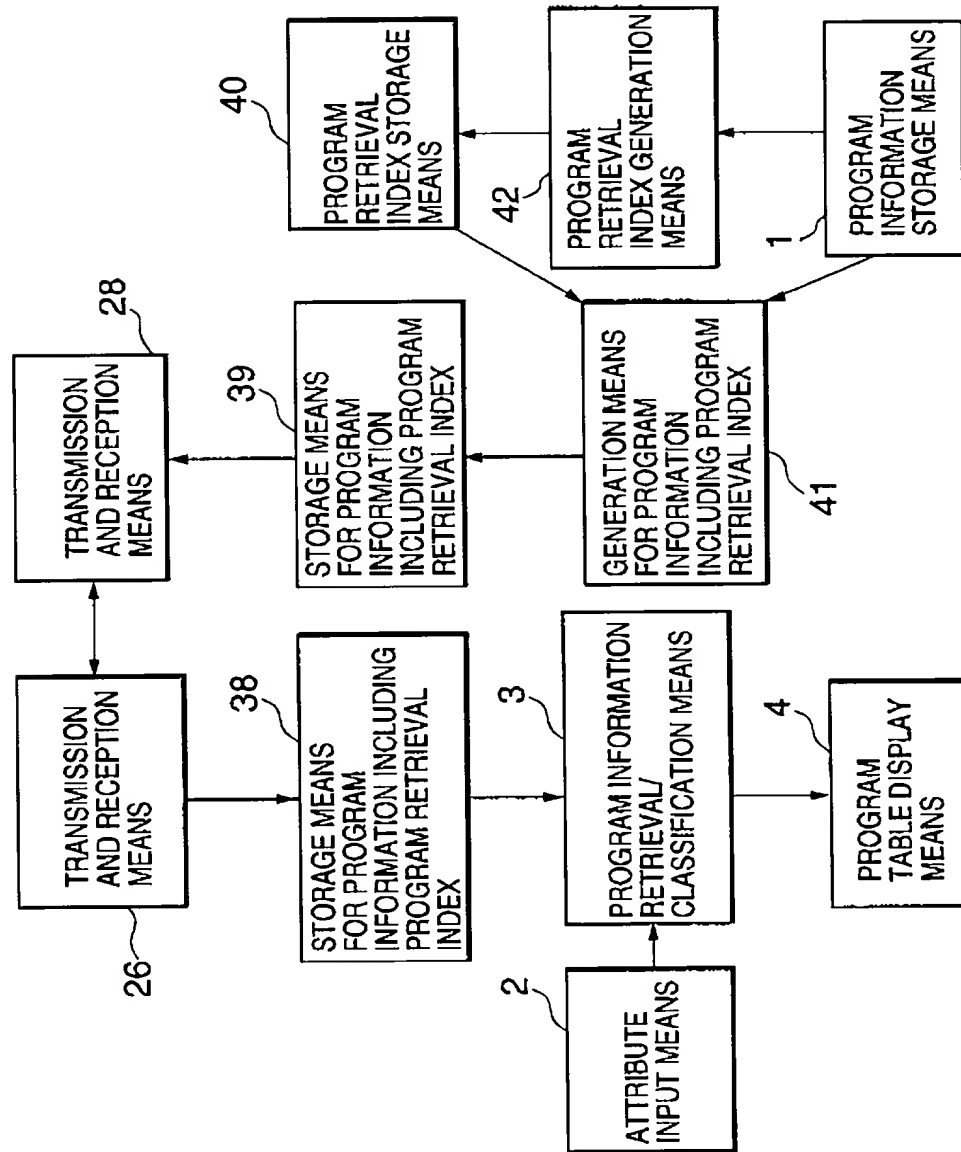
FIG. 33





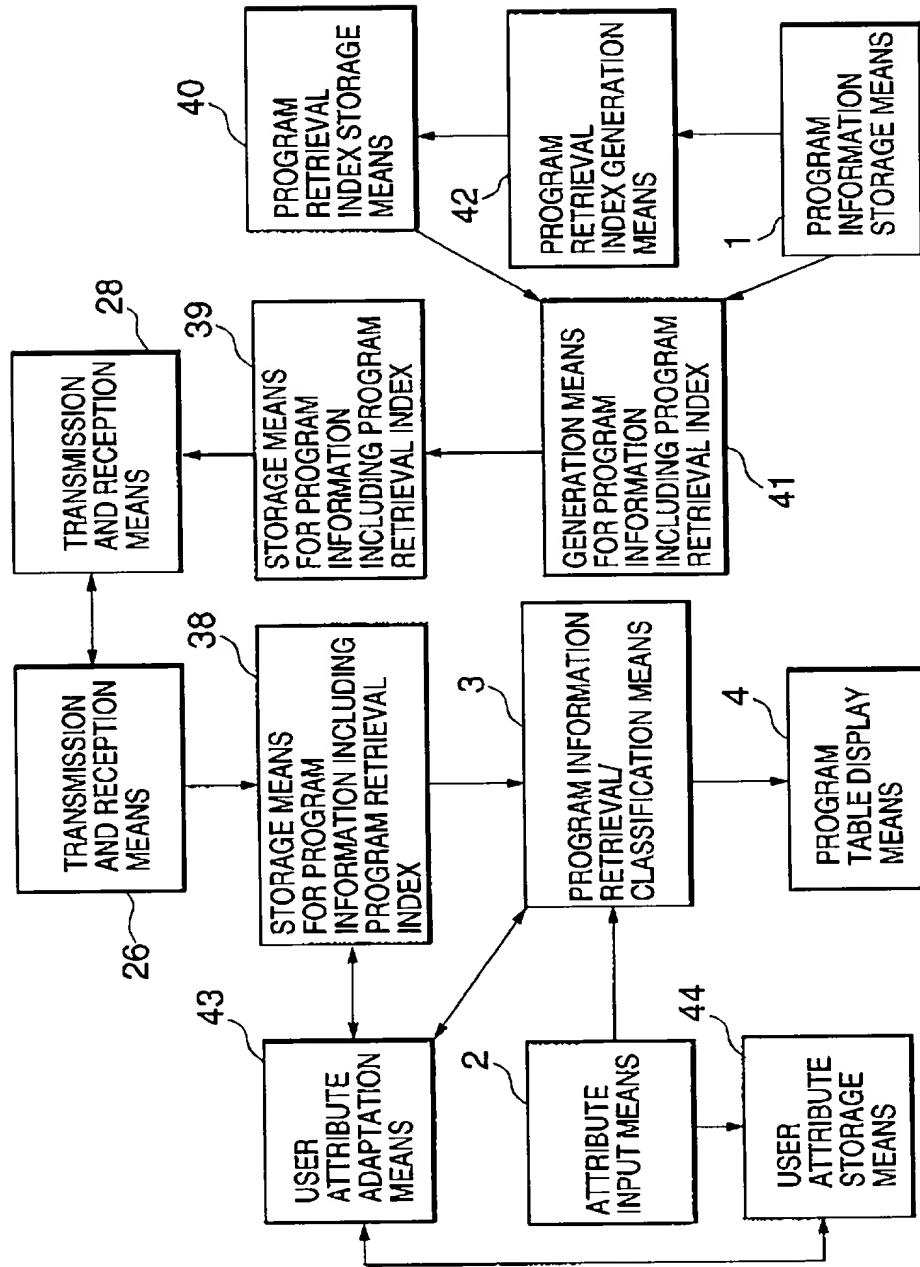
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FIG. 34



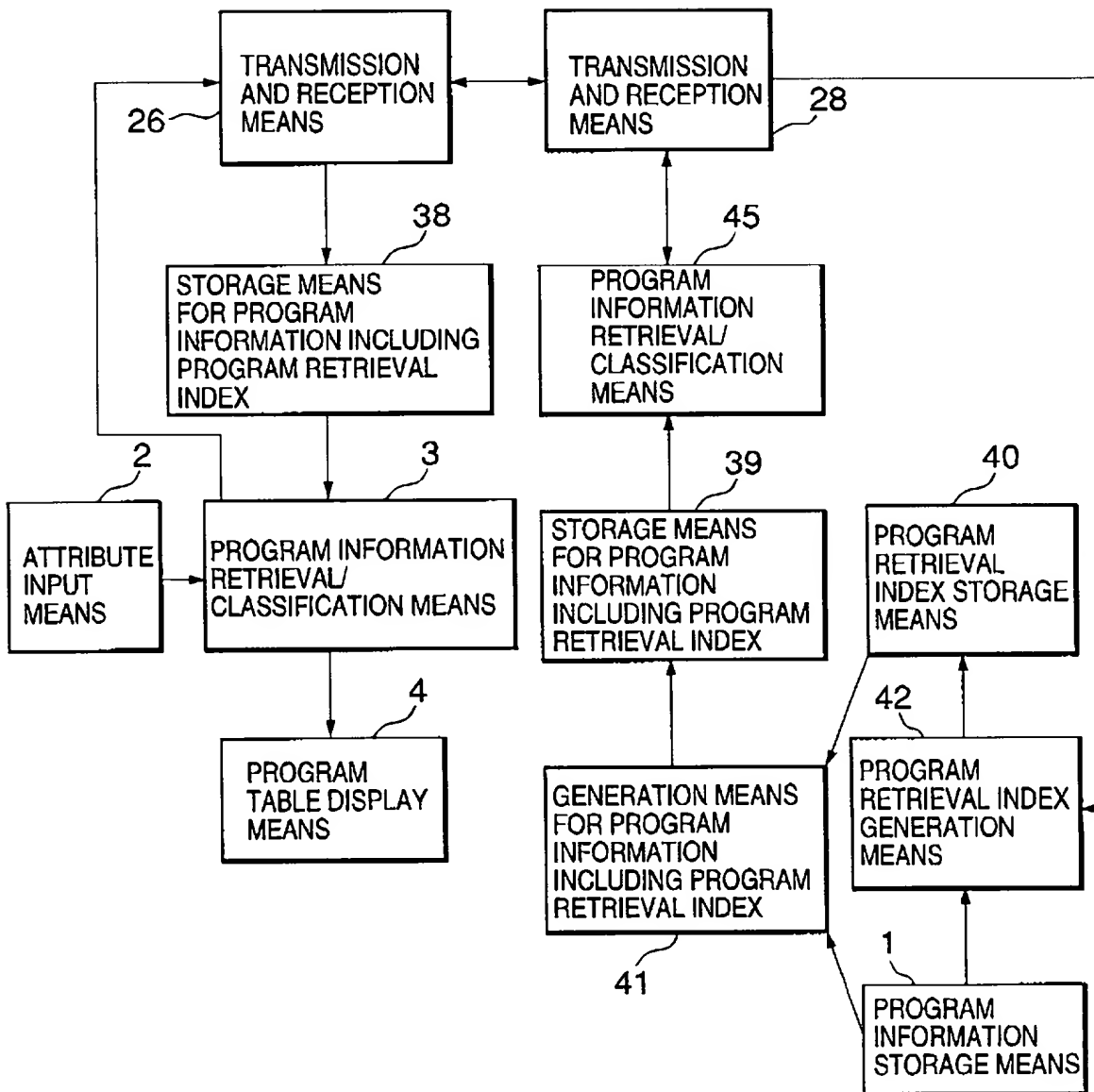
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FIG. 35



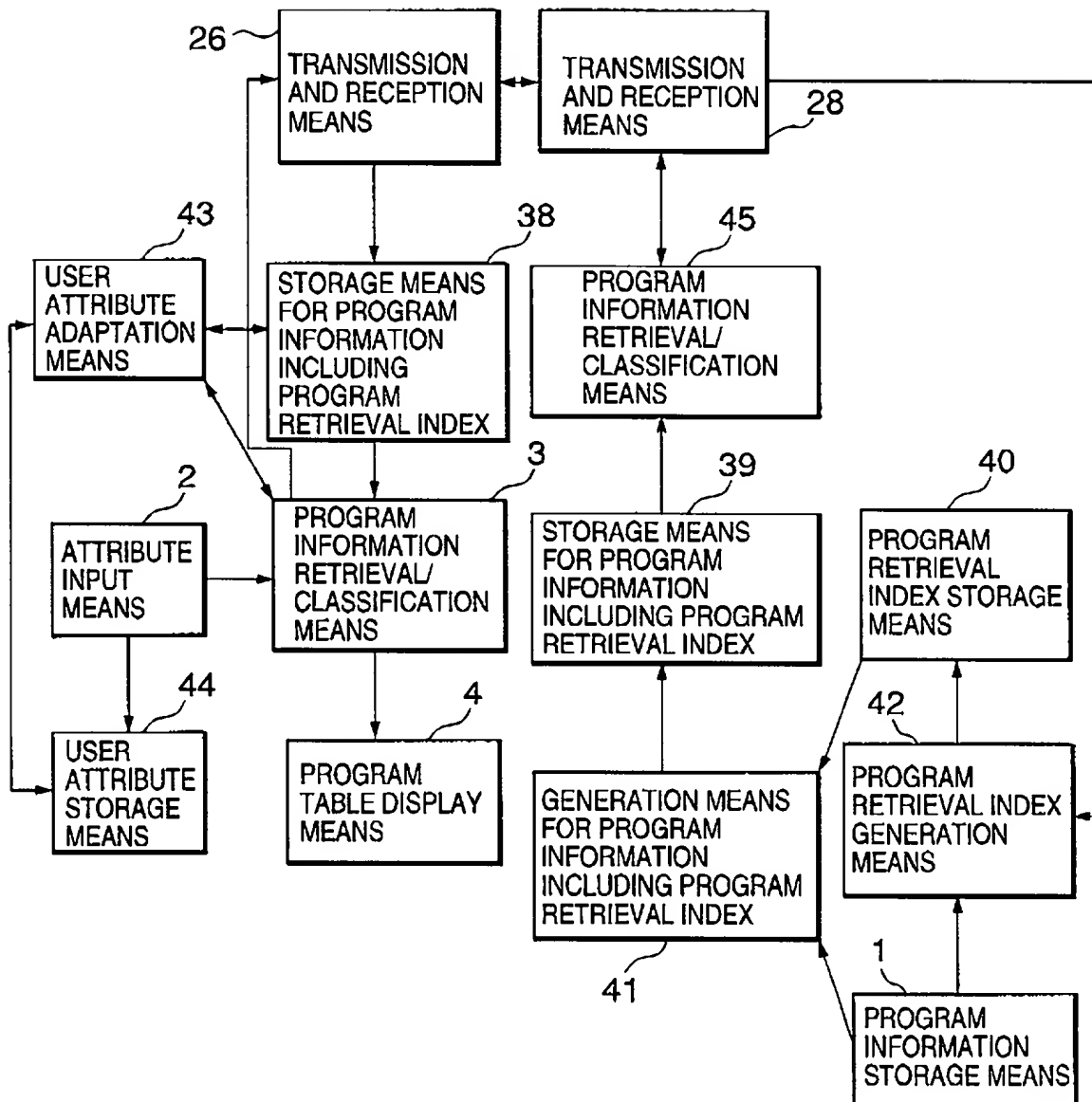
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FIG. 36



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FIG. 37



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FIG. 38

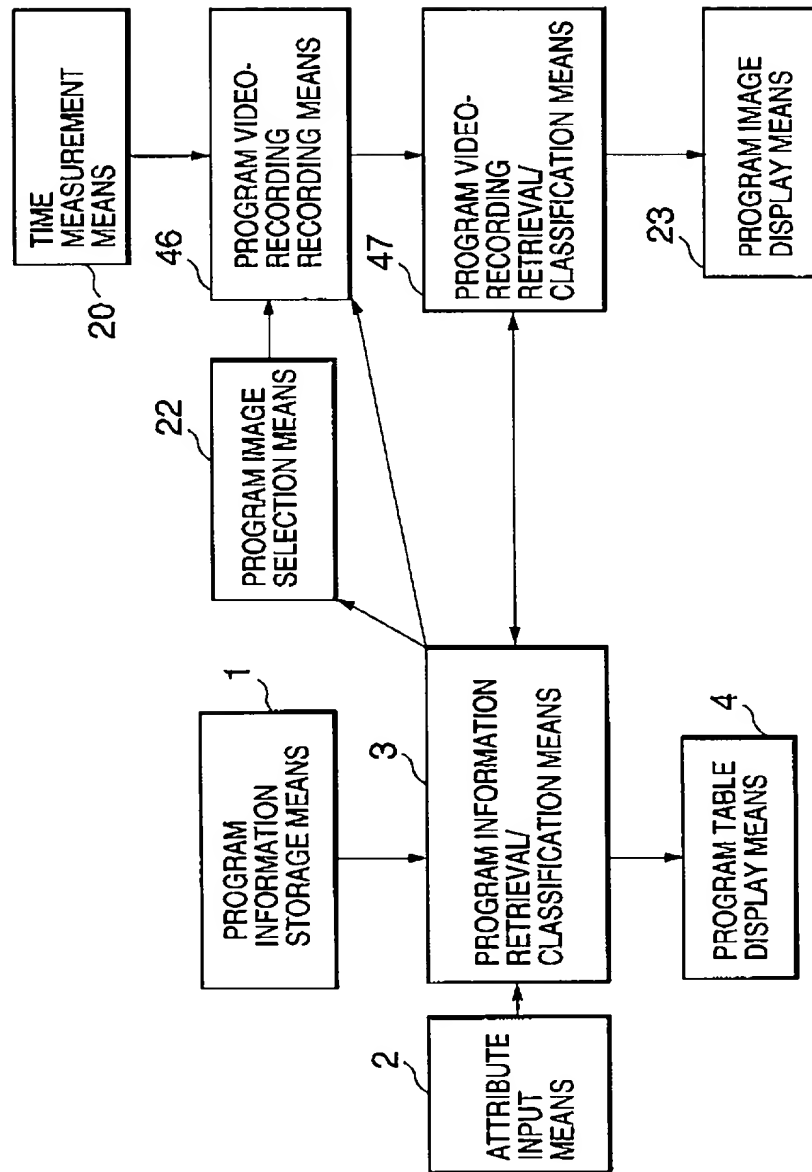


FIG. 39A

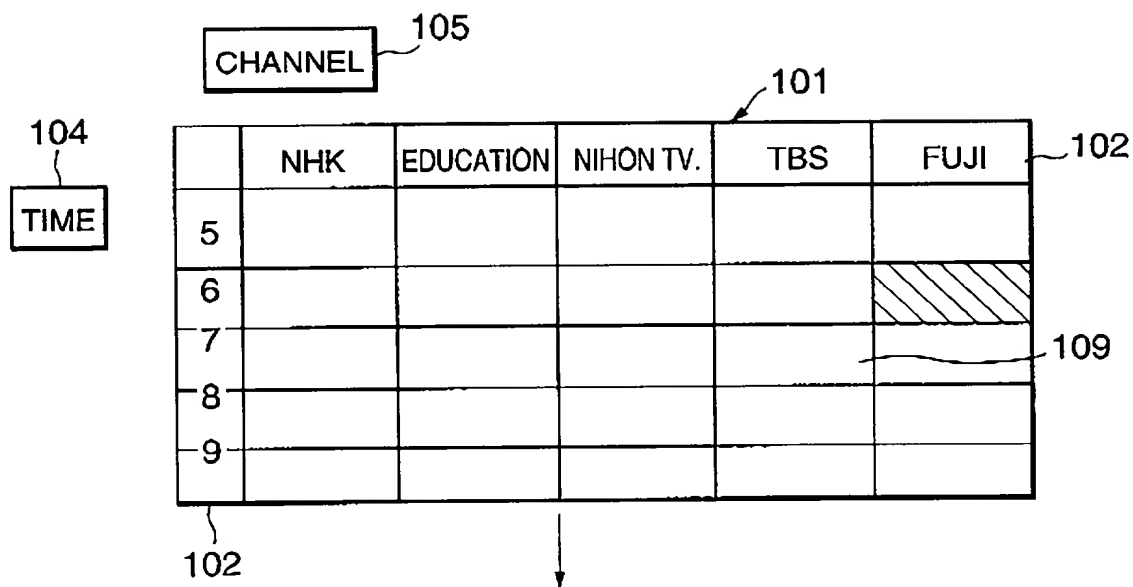
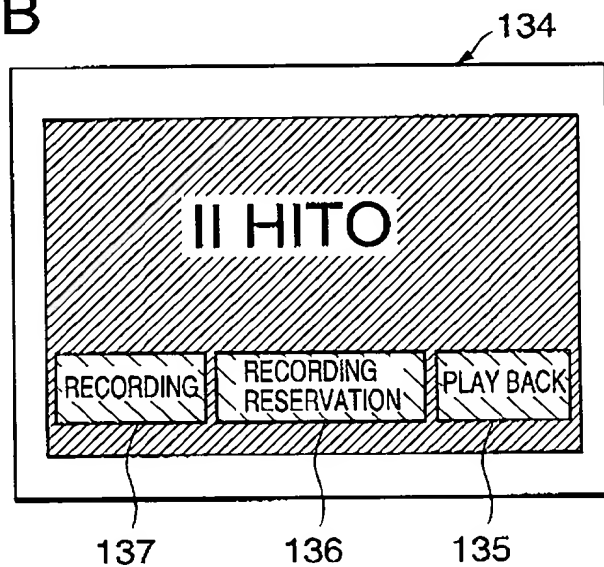


FIG. 39B



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FIG. 40A

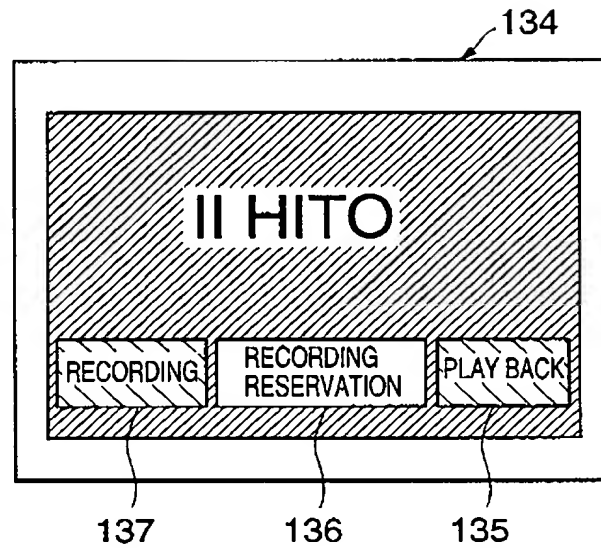


FIG. 40B

RECORDING OR RECORDING RESERVATION TABLE

TIME	CHANNEL				
	NHK	EDUCATION	NIHON TV.	TBS	
5					
6					
7					
8					
9					

104

105

139

138

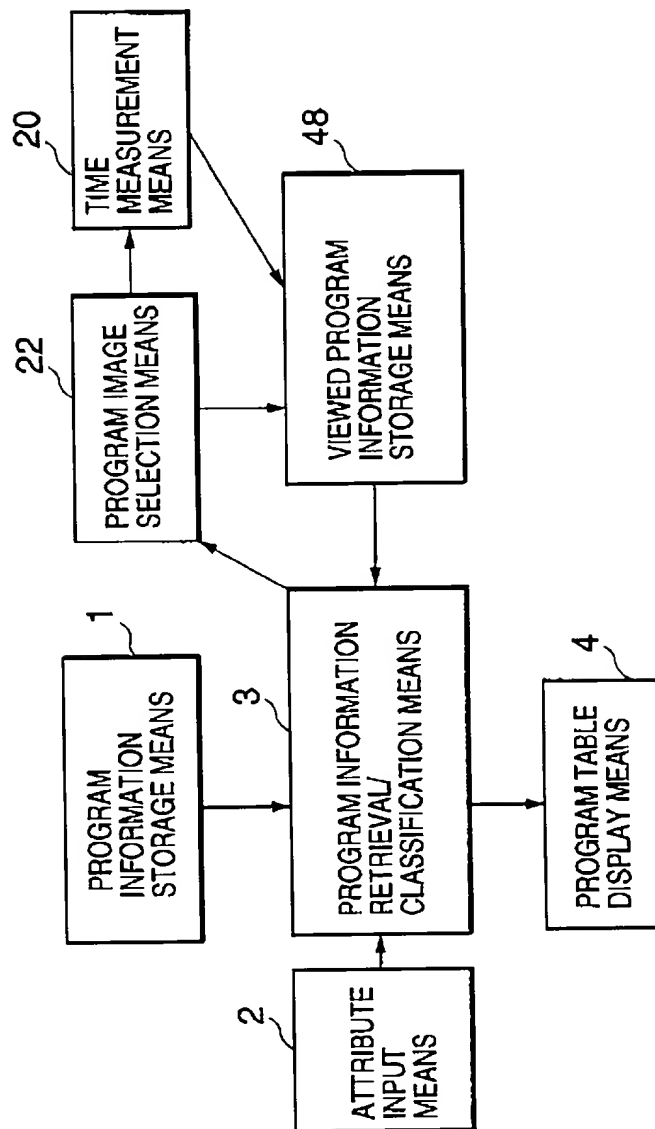
103

109

102

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FIG. 41





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FIG. 42A

104  
TIME

105 CHANNEL

107 DAY OF WEEK

101

103

140 PROGRAM HAVING EVER BEEN VIEWED

109

102

	NHK	EDUCATION	NIHON TV.	TBS	FUJI
5					
6					
7					
8					
9					

FIG. 42B

104  
TIME

105 CHANNEL

107 DAY OF WEEK

101

103

140 PROGRAM HAVING EVER BEEN VIEWED

102

	NHK	EDUCATION	NIHON TV.	TBS	FUJI
5					
6					
7					
8					
9					

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FIG. 43

357040" 20580460

	1	2	3	4
COMPUTER	NHK; NATION STANDING ON ELECTRONICS	NHK EDUCATION PERSONAL COMPUTER SCHOOL	THE UNIVERSITY OF THE AIR; PERSONAL COMPUTER ANALYSIS	
DIVING	TV. ASAHI; AMAMI OSHIMA	NIHON TV.; SOUTHERN COUNTRY PARADISE		
MY TASTE	NHK EDUCATION; SCIENCE EYE	TBS; THE WORLD OF VOD		
PROGRAM VIEWED LAST TIME	NHK EDUCATION; TOGETHER WITH MAMMA	FUJI TV.; PONKIKKIES	TV. TOKYO; DORAEMON	

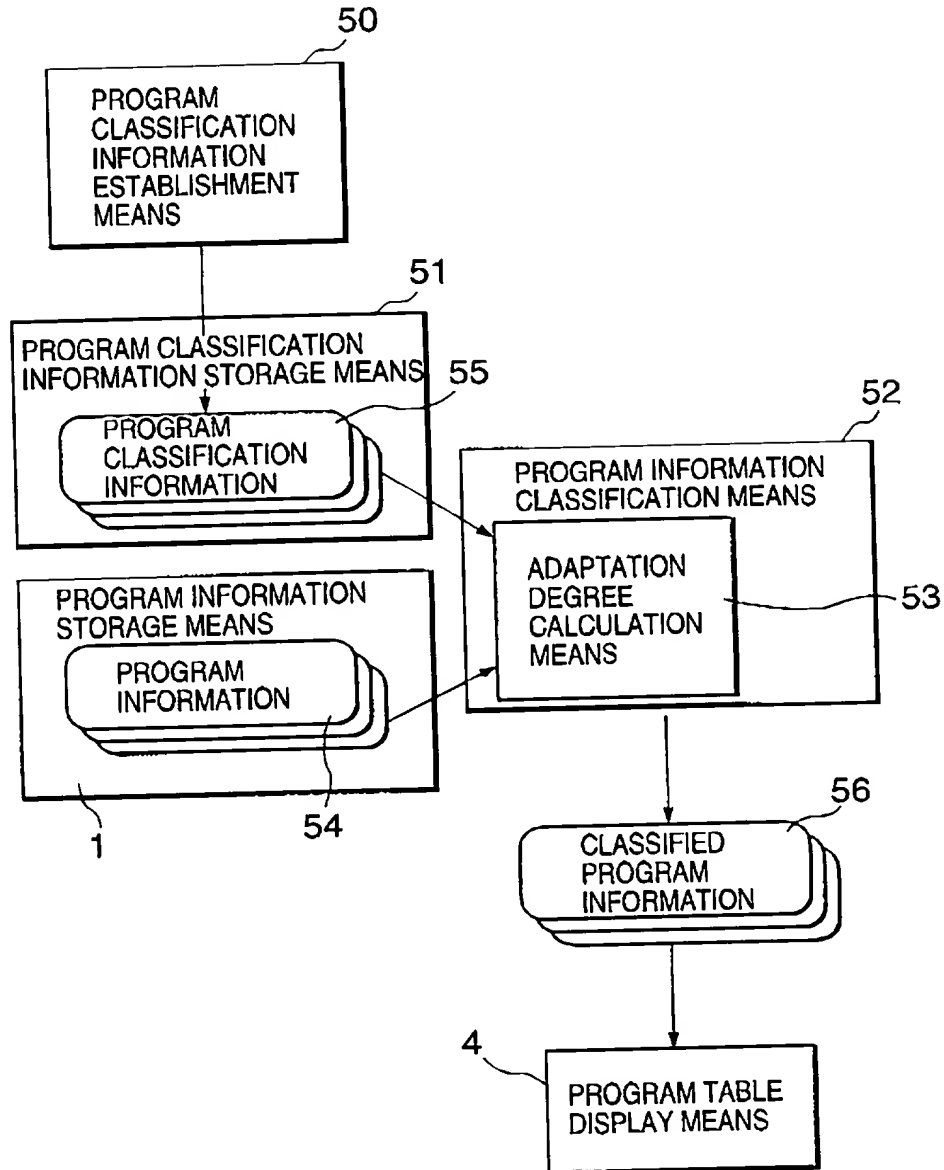
102

120

103

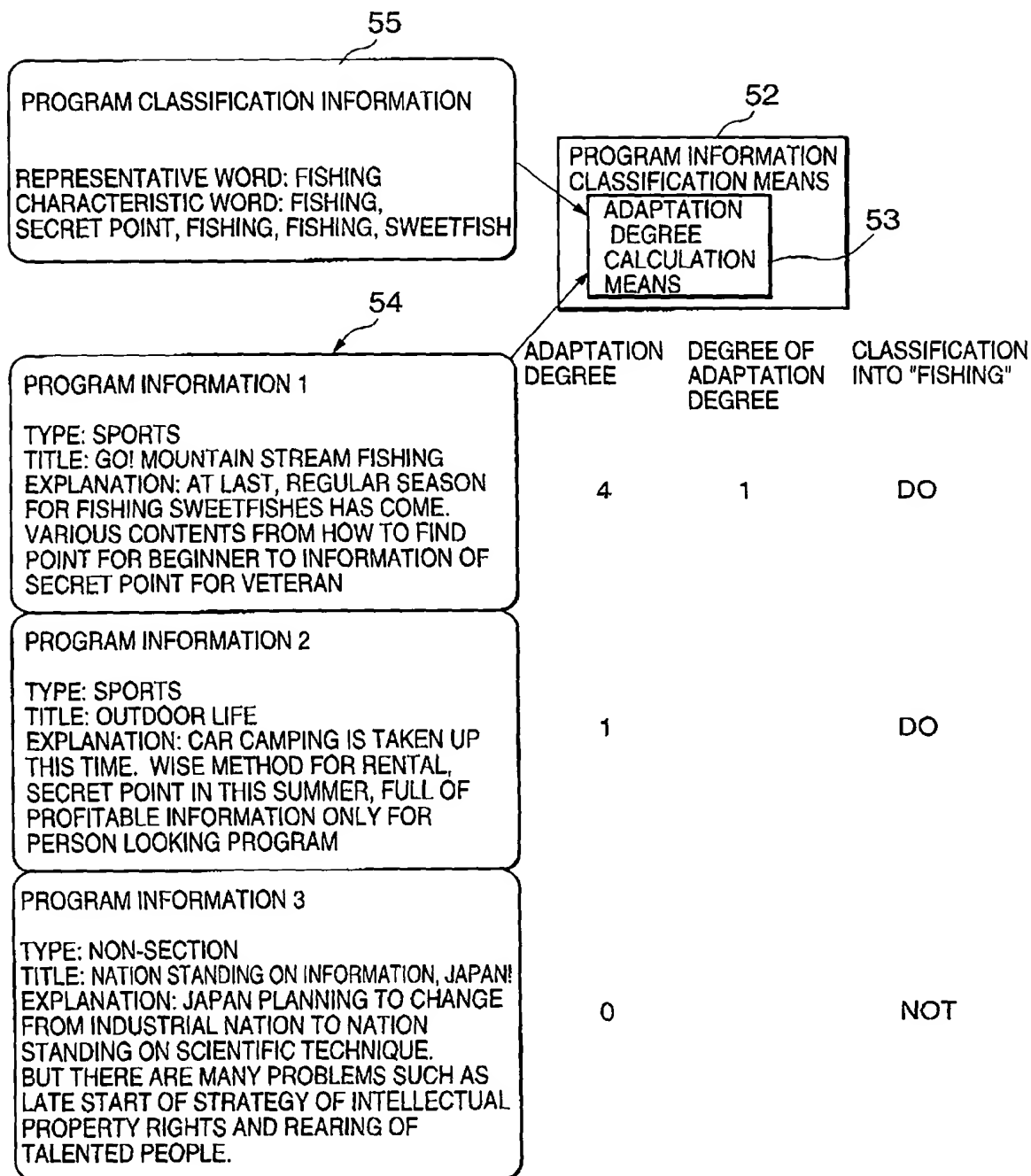
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FIG. 44



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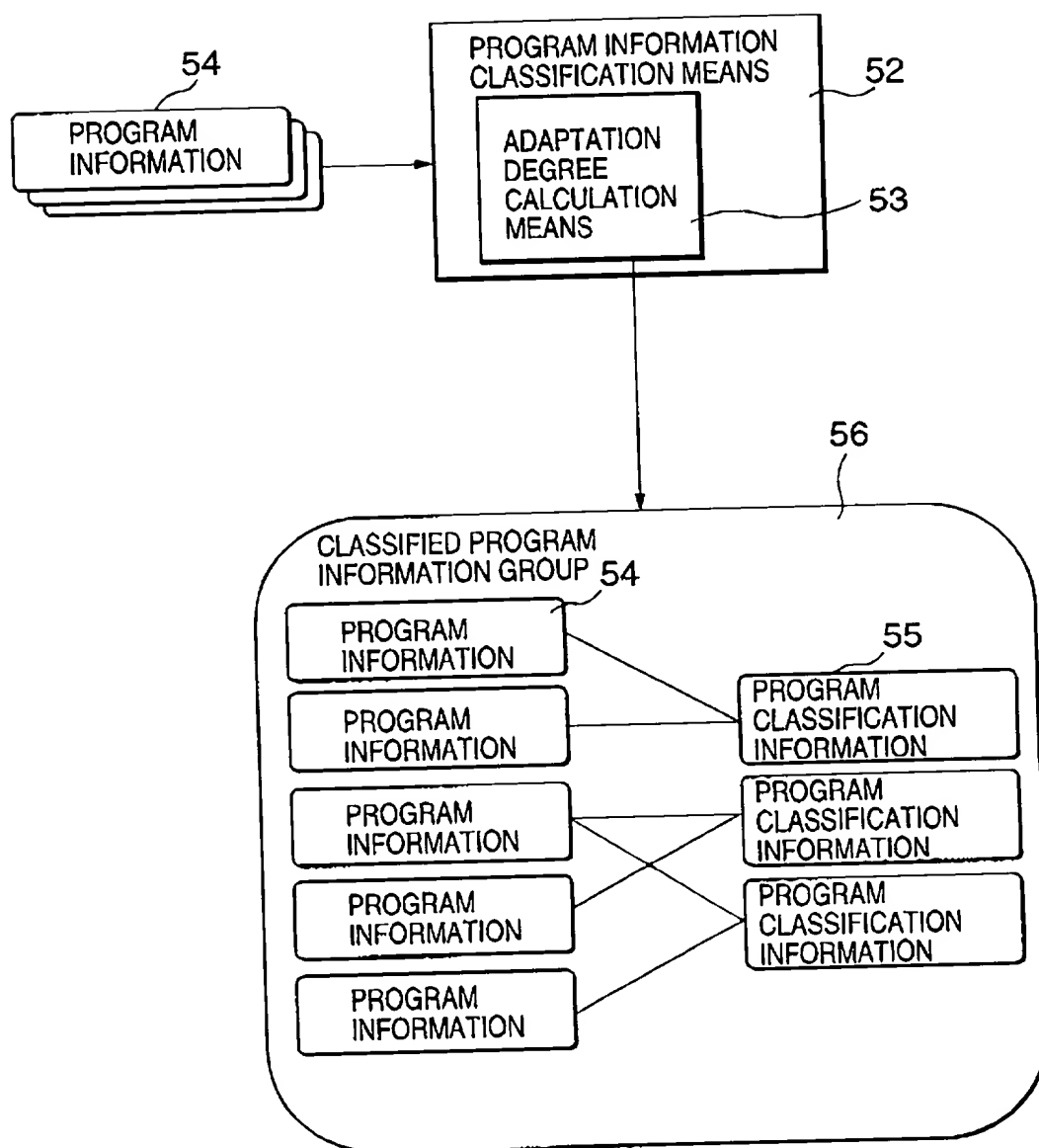
FIG. 45



987020" 90590160

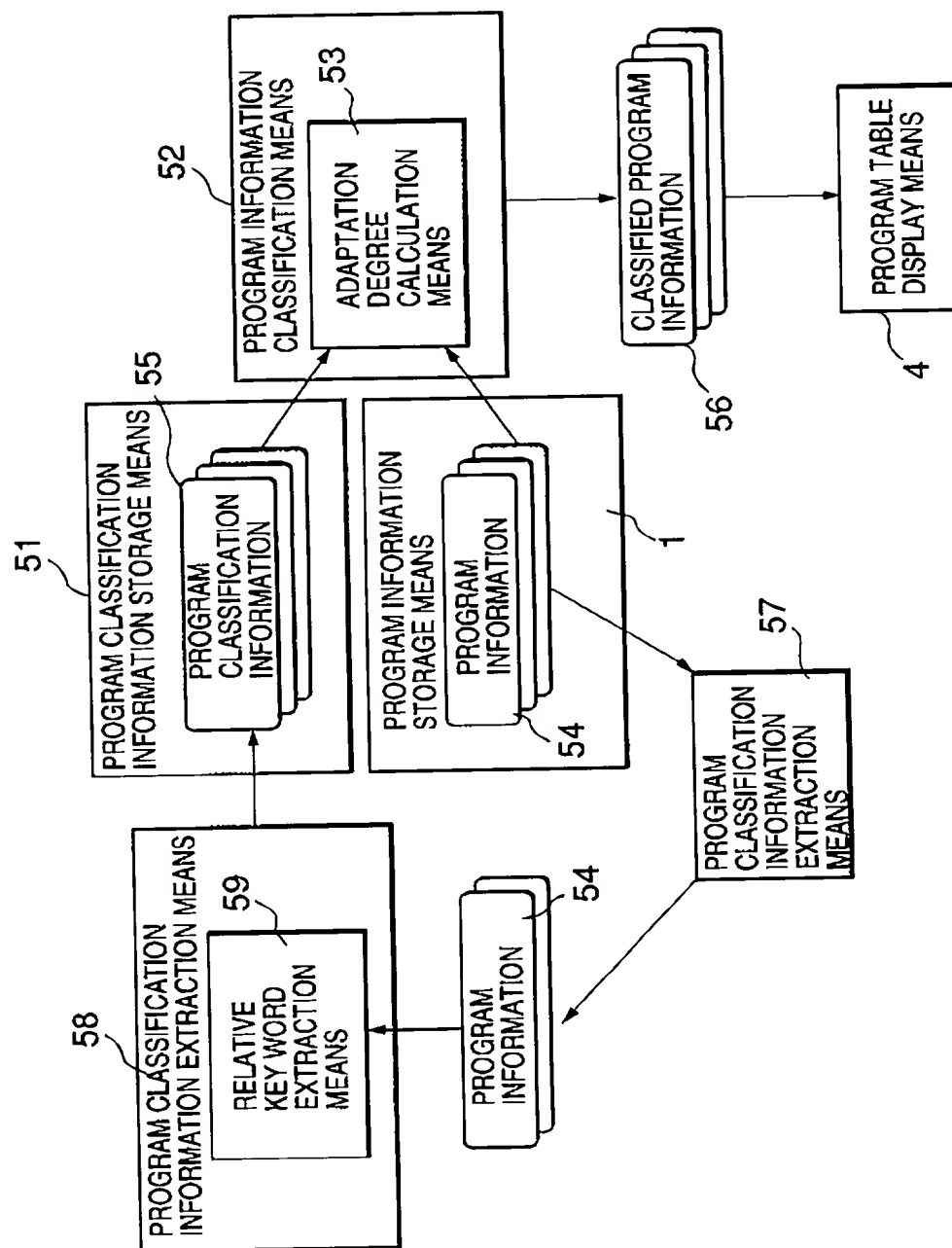
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FIG. 46



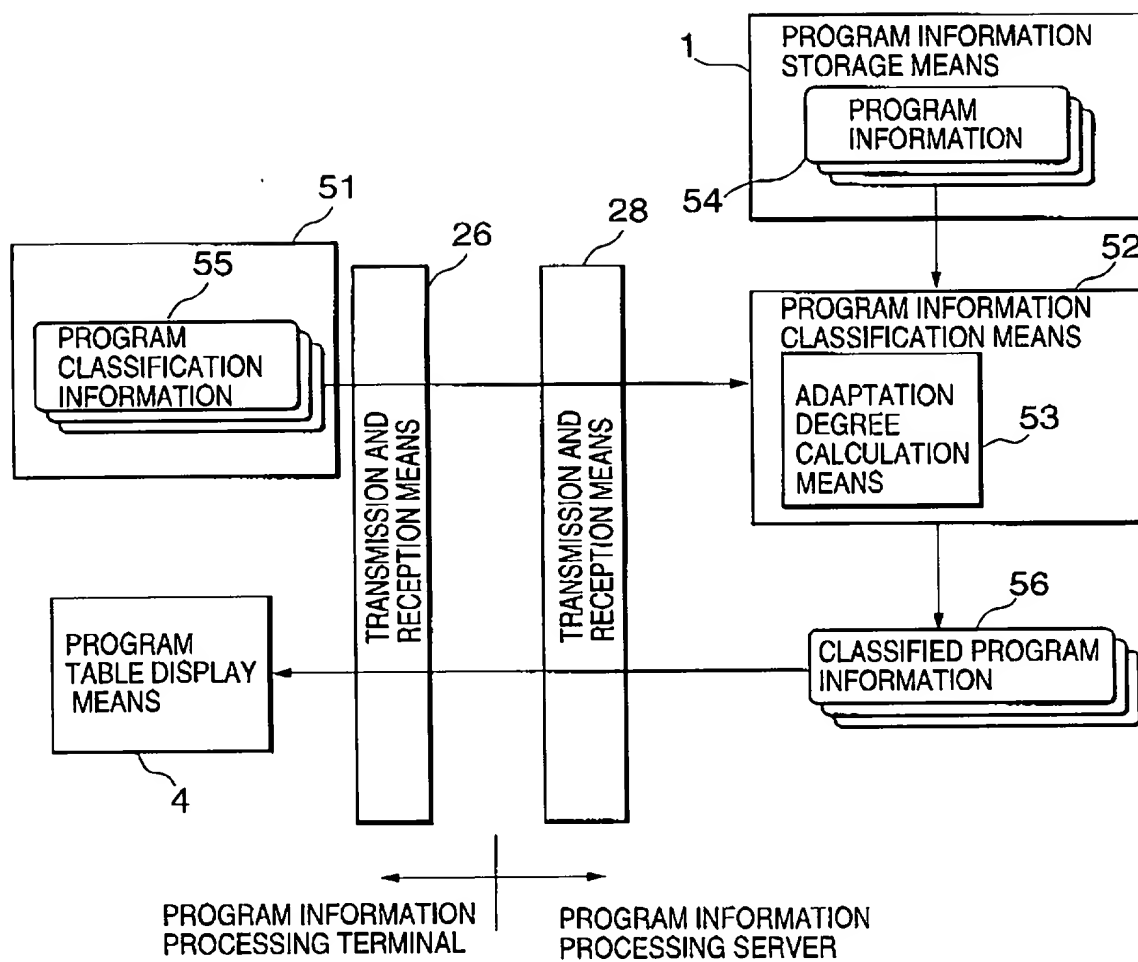
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FIG. 47



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FIG. 48



Docket No.:

**DECLARATION AND POWER OF ATTORNEY**

As a below named inventor, I hereby declare that:

My residence, post office and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter claimed and for which a patent is sought on the invention entitled the specification of which "SYSTEM FOR PROCESSING PROGRAM INFORMATION"

☒ is attached hereto ☐ was filed on \_\_\_\_\_ as Application Serial No. \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is known to me to be material to patentability in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365(b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT international application which designated at least one country other than the United States, listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):			Priority Claimed	
Number	Country	Day/Month/Year filed	Yes	No
9-194750	Japan	July 3, 1997	X	

I hereby claim the benefit under 35 USC §119(e) of any United States provisional application(s) listed below.

Prior Provisional Application(s):	
Application Number	Filing Date

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s), or Section 365(c) of any PCT international application designating the United States, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States or PCT international application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56 which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

Prior U. S. Application(s):		
Serial No.	Filing Date	Status: Patented, Pending, Abandoned

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.



I hereby appoint the following attorney(s) and/or agent(s): Allan M. Lowe, Reg. No. 19,641; Benjamin J. Hauptman, Reg. No. 29,310; Israel Gopstein, Reg. No. 27,333; Kenneth M. Berner, Reg. No. 37,093 and Michael G. Gilman, Reg. No. 19,114 all of

LOWE HAUPTMAN GOPSTEIN & BERNER, LLP  
99 Canal Center Plaza, Suite 420  
Alexandria, Virginia 22314

with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, and all future correspondence should be addressed to them.

Full name of sole or first inventor: Hideki Yasukawa

Inventor's signature: *Hideki Yasukawa* Date: June 24, 1998

Residence: Tokyo, Japan

Citizenship: Japanese

Post Office Address: 3-5-8-101, Kichijoji Kita-machi, Musashino-shi, Tokyo 180-0001 Japan

Full name of second joint inventor: Yoshihiro Noguchi

Inventor's signature: *Yoshihiro Noguchi* Date: June 24, 1998

Residence: Ichikawa-shi, Chiba-ken, Japan

Citizenship: Japanese

Post Office Address: 1-11-13-203, Fukuei, Ichikawa-shi, Chiba-ken 272-0137 Japan

Full name of third joint inventor: Masaki Hoshida

Inventor's signature: *Masaki Hoshida* Date: June 24, 1998

Residence: Tokyo, Japan

Citizenship: Japanese

Post Office Address: 6-10-9-101, Togoshi, Shinagawa-ku, Tokyo 142-0041 Japan

Full name of fourth joint inventor: Tsuyoshi Ueno

Inventor's signature: *Tsuyoshi Ueno* Date: June 24, 1998

Residence: Tokyo, Japan

Citizenship: Japanese

Post Office Address: 2-20-5-622, Higashi Rokugo, Oota-ku, Tokyo 144-0046 Japan

\*\*\*\*\*  
Full name of <sup>fifth</sup> joint inventor: Fumiyuki Kato

Inventor's signature: *Fumiyuki Kato*

Date: June 24, 1998

Residence: Yokohama, Japan

Citizenship: Japanese

Post Office Address: 863-4-608, Tokaichiba-machi, Midori-ku, Yokohama 226-0025 Japan  
\*\*\*\*\*

Full name of <sup>sixth</sup> joint inventor: Yutaka Tomioka

Inventor's signature: *Yutaka Tomioka*

Date: June 24, 1998

Residence: Yokohama, Japan

Citizenship: Japanese

Post Office Address: 8-9-6-401, Hino, Konan-ku, Yokohama 234-0051 Japan  
\*\*\*\*\*

Full name of <sup>seventh</sup> joint inventor: Hayashi Itou

Inventor's signature: *Hayashi Itou*

Date: June 24, 1998

Residence: Matsudo-shi, Chiba-ken, Japan

Citizenship: Japanese

Post Office Address: 177-1-302, Nishimabashi Aikawa-cho, Matsudo-shi, Chiba-ken 271-0045 Japan  
\*\*\*\*\*

Full name of <sup>eight</sup> joint inventor: Takao Isogawa

Inventor's signature: *Takao Isogawa*

Date: June 24, 1998

Residence: Sagamihara-shi, Kanagawa-ken, Japan

Citizenship: Japanese

Post Office Address: 2-3-302, Sagamidai Danchi, Sagamihara-shi, Kanagawa-ken 228-0822 Japan

Full name of fifth joint inventor:

Inventor's signature:

Date:

Residence:

Citizenship:

Post Office Address:

Full name of sixth joint inventor:

Inventor's signature:

Date:

Residence:

Citizenship:

Post Office Address: